The New England
Journal of Medicine

VOLUME 208 JUNE 15, 1933 NUMBER 24

Massachusetts Medical Society

THE ORIGINS OF THORACIC SURGERY*

BY ELLIOTT C. CUTLER, M.D.†

Mr. President, Fellows of the Massachusetts Medical Society, Guests and Friends:

I CAN never thank your committee sufficiently for the honor they have conferred in asking me to give this Shattuck Lecture. Anyone brought up in the medical circles of New England of our day would welcome the opportunity of sheltering himself even for a moment beneath the Shattuck family tree. And no one here, except those few with greater youth than I, can ever forget the fresh fragrance of the personality of our beloved teacher and friend, Fred Shattuck. That the Harvard Medical School has suggested renaming the street upon which it resides after this member of a great family is only one evidence of much unspoken gratitude and affection. His sons who are with us, his brother George who gave the first Shattuck Lecture in 1890, his father, and his grandfather who established this lectureship, all are examples of what we are happy to look upon as our most valuable citizens. To the George Cheyne Shattuck who endowed this lectureship we are also indebted for the endowment of the Shattuck Professorship of Pathological Anatomy at the Harvard Medical School, which was established and endowed in 1854, and held consecutively by J. B. S. Jackson, R. H. Fitz, W. T. Councilman, and S. B. Wolbach. This member of the Shattuck family received his college training at Dartmouth and his medical training at Pennsylvania. Soon after his return to Massachusetts he received an honorary A.M. from Harvard and an honorary M.D. from Dartmouth. His Alma Mater later conferred upon him an honorary LL.D. Those of you historically minded will be interested to know that I have before me a book printed in 1808 in Boston in which are bound three Boylston Prize Dissertations for the years 1806 and 1807, all written by the George Cheyne Shattuck who originated these lectures. The topics are as follows:

1. On the difference between Mortification produced by an external cause, and that which is produced by constitutional defect, the diagnosticks and proper mode of treatment of each.

2. On the Structure and Physiology of the Skin with a view to the diagnosticks and cure of disease usually denominated cutaneous.

3. On the causes, diagnosticks, and cure of Biliary Concretions.

Here in the brief period of two years are contributions so widely separated as to shame not a little the specialization of today.

The name, George Cheyne, came into the family because the father, Benjamin, also a doctor, admired the writings of the celebrated English physician of that name. The treatise on gout by this George Cheyne is doubtless known to some of you. Benjamin Shattuck, the father, was a graduate of Harvard College in 1765 and practiced medicine in Templeton, Massachusetts, having learned the art as apprentice under a Dr. Prescott of Groton, Massachusetts. Here our Shattuck medical tree began, for this Benjamin's father, Stephen, was a farmer, and another Benjamin, his father, was a minister graduating from Harvard College in 1709. Five generations of his descendants have adorned New England medicine and we take pleasure today for this society in acknowledging our deep debt of gratitude to this most fruitful tree.

The illustrious names of the men who have preceded my humble efforts of today gave me the only reason for hesitation in accepting this responsibility. My hesitation, however, cannot have equalled the courage of your committee who must bear the responsibility of having chosen me to give this Lecture. For they may well have feared that one who had been away from Boston so long, now nine years, might not conform to the conservative and decorous ways of speech so much to be desired on such occasions.

This lectureship, established in 1854 by the first George Cheyne Shattuck, great-grandfather of our friends of today, permits the speakers the greatest diversity in choosing their subject-matter, for the topic may be historical or otherwise and may relate to the climate or the dis-

*The Shattuck Lecture delivered at the Annual Meeting of the Massachusetts Medical Society, Boston, June 5, 1933.

†Cutler — Moseley Professor of Surgery, Harvard Medical School. For record and address of author see "This Week's Issue," page 1269.

eases seen in this Commonwealth. As a rule the surgeon, so often a pushing, outspoken, and unorthodox fellow, has been excluded from this lectureship, only ten surgeons in forty-three years having been selected for this discourse. That two of my direct predecessors in the Chair of Surgery which I now occupy, my own "Chief," Dr. Harvey Cushing, and Dr. David Williams Cheever, the father of my immediate associate and former teacher, are among these surgeons thus honored gives me the greatest satisfaction. Scientific subjects have usually been selected, and, when a surgeon has been given this opportunity, he has, as a rule, preferred to depict an advance in that part of medicine in which he has had a chief interest.

Although my training has covered most of the ramifications of surgery in preparation for a life devoted to training young men in our art, I, like most workers in medicine, have a special niche in which I play and study in those moments which one steals each year with increasing difficulty from the routine program of one's daily tasks. My interest for some ten years has, at least as regards personal attempts to increase our surgical knowledge and abilities, confined itself largely to a study of certain disorders found within the thorax. I have, therefore, chosen as my topic "The Origins of Thoracic Surgery." You will see that my interest in the practical statements of what are the present limits of thoracic surgery has left me but scant time for the beginnings of this great venture. However, a lectureship must have a title and so long as I remain within the thorax my specialist friends in another field cannot take umbrage from these remarks.

It is true that I had looked into empyema and abscess cavities from my student days of twenty years ago onward, and also true that during the War imperative necessity showed me the possibilities of thoracic operations, but I had never participated in a carefully planned major thoracic operation until ten years ago.

My real experience in this field for surgical endeavor began with laboratory attempts to apply surgery to certain disorders of the heart. I soon found that one could not apply the experimental method to alterations in the circulation without being forced to become familiar with the other complicated mechanism which resides within this portion of the body. A correct appreciation of the functions of the heart, and one cannot study disease, let alone therapy, without a full appreciation of function and structure, demands a complete understanding of the unusual physical happenings which have to do with respiration. The shifting negative pressures which accompany and are a part of respiration are also essential to the proper function of the heart. Thus the cardiac surgeon, should specialization ever offend with such a monstrosity, will find that his learning must at least include all physiological considerations within the thorax. This will force him to study the disorders of the lungs and this in turn may keep his pedestal sufficiently broad to preserve an equilibrium, which is sometimes a difficult feat in a narrow field unless preliminary training has been broad and diversified.

As an example of this interrelationship often so close that clinical findings must be explained by a dual mechanism affecting both the heart and the lungs, take the common finding of clubbed fingers, originally described by Hippocrates, and known perhaps better under the title given by Pierre Marie, chronic hypertrophic pulmonary osteo-arthropathy. Here is a clinical picture often associated with intrathoracic conditions. One sees it in congenital heart disease, and one sees it also when the cardiac function is perfectly normal but when there is a focal pulmonary disorder with consolidation of the lung wherein blood may circulate without being able to give off its metabolic products and acquire fresh oxygen. We shall see that this interrelationship of heart and lung will force itself into every consideration of importance within the limits of our subject today.

This almost Siamese twin-like relationship of the major circulatory and respiratory mechanisms is seen in every intrathoracic condition. Let us examine for a moment the unfortunate happenings which arise in a patient whose chest is widely opened for a considerable period of time. There be some who think the untoward effects are chiefly due to the imperfect ventilation which results from the collapsed pulmonary field, for we now know that with small thoracic openings the interference with respiration affects both sides and almost equally so, if the opening be small. As the opening is increased in size the interference on the side in which the opening has been made soon becomes by far the more serious factor. There be others who feel that the effect is produced largely upon the circulation and that the interference with ventilation is of secondary consequence. Thus, when the chest is opened and the lungs partially collapsed, the motion of the lung induced by the shifting negative pressures of the respiratory efforts is lost. This failure to move the lungs greatly interferes with the pulmonary circulation. This of itself would be bothersome, but in addition the suction action of the now absent negative pressure upon the venae cavae is gone and the right heart fails to fill as easily as under normal circumstances. This in turn results in slowly mounting venous pressures, the gradual accumulation of an oxygen deficit, and the rising systolic pressure due to irritation of the carotid sinus centers. Further, unless the mediastinum be rigid, which it is not except under

the conditions of chronic suppuration or widespread invasion with tumor, we have the constant fluttering, back and forth, of the most important organ of the body. This dancing motion not only seriously interferes with the ability of the heart to perform its function, but so upsets its intrinsic as well as extrinsic nervous apparatus that the major circulatory mechanism soon breaks down. This discussion should suffice to present to you the major physiological considerations and to expose to you the propriety and necessity of considering intrathoracic surgery as a whole.

All this by way of introduction. I come before you today with this topic largely to impress upon those members of the profession in the general practice of medicine the extent of the field of intrathoracic surgery. The strength of our profession in the sense that it has the belief and confidence of the sick lies in the hands of those who practice in the homes of the people. These practitioners of medicine must appreciate what forms of therapy can be brought to assist their suffering patients. I am anxious to bring forward today those disorders within the thorax for which surgery may now with universal approval be said to afford some measure of relief.

I have already hinted that the long delay in the entrance of surgery to the thorax has been due to several technical barriers which only the laborious process of investigation could unravel. In the first place, there is this matter of maintaining both ventilation and a competent circulation with the thorax open. In the second place there is the difficulty of working in a field where bacterial immunity is much less than in those other parts of the body with which the surgeon was already acquainted. This latter circumstance in part was due to the difficulty of getting rid of "dead-spaces," as the surgeons call cavities or openings of the body where they cannot bring into apposition living tissues. Moreover, the danger of sepsis is increased by the fact that when the chest is opened, its contents collapse away from the opening, thus tending to suck material into the pleural space, an occurrence quite different from what happens when the abdomen is opened and the viscera try to extrude themselves. An equally powerful deterrent lay in the inherited and traditional fear, which we commonly crystallize into the ambiguous term "conservatism," of interfering with the well-known vital functions of respiration and circulation. Today, however, physiological experimentation and bacteriological study, advances in surgical technique and competent methods for anesthesia have made it possible for the surgeon who knows of these things to enter the chest with as much relative safety to his patient as when he enters the abdomen. This is the last great field for the surgeon to explore and now that he has methods which make it safe for him to enter this field, it is only right and proper that the information should be disseminated and patients with certain thoracic disorders should be given the hope which surgical therapy may promise them.

One might enumerate the intrathoracic conditions for which the surgeon now offers hope under the common headings of trauma, congenital disorders, infections and tumors, but this would necessitate such a continuous shifting of our anatomical field that confusion would surely result. One could, indeed, put in a whole hour on any single condition, for in any new field many explanations are demanded. Take, for example, injury. Surgery is the child of trauma and in this particular field the immense stimulus given by the war experience to this generation of surgeons cannot be overemphasized. We could discuss penetrating wounds by instruments and bullets or the terribly serious consequences of crushing injuries to the thorax with the fracture of many ribs. But you all know that trauma is a field for surgical therapy; there is, indeed, no other therapy. Again we might take up infection of the thoracic cage, and progress from without inward, but these disorders of the exterior are also common knowledge. For example, tuberculosis and actinomycosis of the chest wall have long been recognized as surgical conditions.

I have, therefore, determined to set before you those disorders which are only now beginning to be recognized as surgical possibilities. These are largely conditions demanding real intrathoracic procedures, operations carried out with the chest wall often widely opened, explorations for which the thoracic surgeon now has at hand a technique that does away with risks other than those common to all surgical procedures. These conditions I shall discuss under pulmonary, mediastinal and cardiac headings. Nor will the diaphragm and the great vessels be forgotten.

We can begin with the maladies of the lung to which the surgeon may bring relief. Infection, except in its septicemic phase, is admittedly a potentially surgical disorder and there are many infections within the thorax or conditions imposed by infection for which surgery may be of assistance. We all know of surgical therapy for empyema; most of us appreciate the advantages of treating by surgical means certain cases of abscess of the lung, whether bronchiectatic and multiple or parenchymatous and single. To be sure, we quarrel whether the drainage in empyema be closed or intermittent or accompanied by the use of antiseptics. And what surgeon could refrain from differing with his bronchoscopic colleague as to whether a pulmonary abscess gave up its con-

tents best via the bronchus or by way of an opening in the chest wall? Though these matters be common knowledge, few realize the tremendous progress which has been made in the treatment of pulmonary tuberculosis, that great scourge of humanity, through surgical endeavors. This is not the occasion to discuss practical technical methods. We are not interested today in the figures presented by the adherents of phrenicotomy, pneumothorax, or extrapleural thoracoplasty procedures in the treatment of this dread disease. We are merely here to state that in our minds there has seldom been a greater forward step in medicine for the good of the great body of people than in the recent advance made in the treatment of pulmonary tuberculosis by surgery. In cases of unilateral pulmonary tuberculosis or predominantly unilateral disease, surgical measures which may place the affected side at rest have shown an extraordinarily satisfactory percentage of beneficial results. The rapidity with which clinical signs disappear, signs which have often been present for years, and the surprising speed with which granulation tissue fills in great spaces and ends in complete fibrosis is little short of miraculous. It behooves every practitioner of medicine to become familiar with this work. Let no one mistake my meaning. The type of case must be carefully selected, the optimum time for the operation well studied, the pre- and postoperative periods surrounded with every precaution. But even with the most rigid rules for the acceptance of cases for this procedure, there will be thousands of patients found to whom increased hope of relief may be given.

Finally in relation to the surgical treatment of pulmonary tuberculosis is the hope that some simpler means of inducing permanent collapse may be found. The experiments of Schlaepfer have shown that ligation of the pulmonary artery is followed by pulmonary collapse and he has suggested combining this with phrenicotomy. More recently Adams of Chicago suggested inducing collapse by painting a caustic substance on the bronchial opening by way of the trachea, utilizing a bronchoscope for accurate localization. We have experimented for two years in an attempt to perfect such a method, for if collapse of an involved lobe could be induced by such a simple procedure and if the secretions diminished before final stenosis of the bronchus occurred, we would have at hand a method of treatment which might well revolutionize the entire therapy of pulmonary tuberculosis. Such a method is now developed and in the process of application to human cases. Its clinical usefulness is by no means determined and it is spoken of here only to stimulate greater interest in the topic of tonight.

Let us now turn from infections to tumors. Many kinds of tumors occur within the thorax. There are the congenital cysts and dermoids, usually confined to the mediastinum. There are benign fibromata or neurofibromata, usually beginning close to the intervertebral openings and lying along the course of intercostal nerves, and there are, of course, malignant sarcomata and other mesothelial tumors. Many of these tumors are readily accessible and easily extirpated. Within the confines of the lung itself, the tumors which arise are largely the malignant bronchiogenic carcinomata which, since they are radio-resistant, will remain as a hopeless condition until we reach the day when their early diagnosis can be made and when the surgeon can safely remove the lobe in which they are resident. I should like to propose today that the time has now arrived when carcinoma of the lung, unless it has already disseminated itself, should be treated by lobectomy. It is true that the early results of lobectomy, whether for carcinoma, congenital disease, or infection, have carried a terrifying mortality figure. But remember that the first twenty-eight gastrostomies all died and that it was fourteen years, after Trendelenburg's suggestion that embolic clots could be removed from the pulmonary artery, before there was a successful case. The field we discuss tonight has hardly as yet come of age! The matter of greatest interest to me in the recent Congress in Washington was the description by Dr. Evarts Graham of a successful case of total pneumectomy in a doctor for cancer of the lung. Such cases will be repeated as experience accumulates. The road is laid; the signposts have been erected. It is now time to make use of what has been so carefully presented to our day and generation.

In addition to infection and tumor within the confines of the lung, there are rare and unusual conditions such as echinococcus cysts and bizarre congenital malformations such as cystic disease of the lung, so-called "soap-bubble" lung.

Finally in relation to the lung, one must mention the almost miraculous ingenuity of the modern bronchoscopist as regards the removal of foreign bodies in the air passages. The work of Chevalier Jackson is now widely disseminated chiefly through the relief brought to our children-patients born with the idea that the mouth is the only way to attain real sensation. His name will forever go down in the annals of surgery as a great one. But the bronchoscope is of value in many pulmonary conditions in addition to its usefulness in removing aspirated foreign bodies In the diagnosis of bronchiogenic carcinoma, in the diagnosis and treatment of infected cavities, this apparatus is essential. The day has come when the thoracic surgeon will take over his own bronchoscopic work, just as the gynecologist uses a cystoscope and the neurological surgeon an ophthalmoscope. There has been

much said lately about the high cost of medical care, much of it buncombe, but some of it of value. At least, we might save an extra consultation in this fashion.

We can consider next mediastinal disorders for which surgery may bring relief. Gravitation abscess, tuberculous infection, actinomycosis and other unusual inflammatory conditions are not infrequently found in this little-studied portion of our bodies. The mediastinum may be approached from the front, either by trephining the sternum as suggested by John Riolan in 1649, or by splitting it as did Milton of Cairo in the original work on mediastinal tuberculosis. Or it may be attacked from behind by the removal of a fragment of a single rib or many ribs at the costovertebral junction. Within the mediastinum are found tumors of considerable interest, since many of them are benign and offer assurance of complete relief if removed. There are the congenital tumors such as dermoids, and those cystic tumors thought to be of bronchiogenic or gastrogenic origin, not so long ago well described by Dr. C. G. Mixter of our own city; and also similarly benign encapsulated rounded tumors such as fibromata, neurofibromata, and chondromata. The malignant tumors found in this small area are largely those which metastasize to the mediastinal glands from elsewhere. Hodgkins' disease is not infrequently seen and of course any tumor whose lymphatic current would reach this area might leave its telltale lump behind it.

Within the mediastinum are found many of our most important organs, but none more pleasurably used than the esophagus. This structure is the unfortunate seat of many disorders. It is impaired by chemical burns; it is the seat of congenital strictures and webs; it sometimes harbors aberrant gastric mucosa which here, as in a Meckel's diverticulum, sometimes ulcerates; and it is unfortunately a common place for carcinomata to originate. Operations upon the esophagus are both dangerous and difficult. This tube is not made for resection and extension. It seems to resist from within the most obnoxious foods and fluids without cavil or complaint, so that the surgeon always marvels at its almost tenuous structure and finds it hard to understand why he is not more successful in his attack upon it. The removal of a neoplasm without subsequent sepsis is technically an extremely difficult feat. There are, however, several cases living and well years after resection of the esophagus in its mediastinal position. These people usually have the upper end brought out in the neck and a gastrostomy wound made in the stomach. They can masticate their food, collect it from the opening in the neck and put it in the stomach, or, as has been done in one case, the food can be washed down through a tube from the neck opening to the stomach opening without the intervening manipulations taking place. Attempts have been made to make an extrathoracic tube between these openings with skin or intestine, but so far success has not been obtained. But the time may not be far distant when the ingenuity of the surgeon will overcome this difficulty and another and most distressing lesion will be conquered. This time will only arrive, however, when early diagnosis can be made and when the patient reaches the surgeon both before starvation has placed its heavy hand and before the growth has gone beyond its original location.

The distressing conditions of cardiospasm, cicatricial and congenital stenoses are less serious, perhaps, because they are attacked from within. But even esophageal dilatation has its risks and many surgeons today prefer to incise the stomach through an opened abdomen and to dilate manually the cardiac orifice than to risk perforation and mediastinitis through blind dilatation from above. In a considerable experience with cardiospasm I am convinced that the procedure mentioned above and initiated by von Mikulicz is certain to give more permanent and satisfactory results. But even the etiology of cardiospasm itself is not settled. When our physiologieal colleagues can explain to us the innervation of the cardia, perhaps we shall only have to divide a nerve or extract the worries of our patients to find a simpler way out of this particular dilemma.

All of these esophageal conditions are now knocking at our doors! A study of any one of them reveals that we are about to travel new roads. That surgeons have methods which quicken their interest adds more laborers to a task which seems to be approaching solution. Roentgenology and bronchoscopy immeasurably increase our ability to make early diagnoses and under these circumstances favorable results will begin to appear.

A word must now be said about the diaphragm, that boundary beyond which even the most avid gynecologist dares not progress. It is the seat, too, of conditions for which the surgeon may bring relief. There are the subdiaphragmatic abscesses, the result of the localization of a peritonitis, which sometimes need to be attacked across an obliterated pleural space, and there are hernias through congenital defects in this structure which sometimes permit abandoned viscera to enter the thorax, from which the surgeon may return them to their proper home, repairing the defect as best he can by mechanical methods.

Finally we come to the heart and pericardium and the great vessels emanating from it, for it is well to encompass in this field the entire ma-

jor circulatory apparatus. The lesions without the pericardium or heart itself in which the surgeon may prove useful consist of two almost terrifying conditions: (1) aneurysms of the aorta, which may be wired to induce intravascular clotting or denervated for the relief of pain; and (2) embolic clots in the pulmonary artery, the removal of which might be more frequently successful were the resident staffs of all hospitals trained to perform this now standardized technical procedure in advance of the catastrophe.

As relates to the pericardium, we can look back with satisfaction on the results of the surgical drainage of this sac for acute suppurative conditions. This simple procedure has long been recommended but, largely because the condition is recognized too late, is not so often utilized as it deserves to be. Now, in addition, we are looking forward to adding to the few brilliant cases in this country in which the pericardium has been removed for chronic adhesive pericarditis. As long ago as 1898 Delorme suggested that there are certain cases of major circulatory failure which seem to result from the cicatricial adhesions which have glued together the pericardium and the heart. The heart when squeezed by such a fibrous constriction fails to fill well and, as a further result, fails in its ability to push out a sufficient mass of circulating blood. Largely because of the failure of the heart to fill, perhaps partly due to mediastinal fibrosis interfering with the venae cavae as well as the constriction to the pericardium, the general circulation backs down and fluid collects in the great serous cavities. This is eventually recognized as the Pick syndrome of polyserositis. It is unfortunate that in our country the diagnosis of adherent pericardium is so rarely made. All of those interested in this field know of the great difficulties of diagnosis, know that retraction of the interspaces where the pericardium is adherent to the chest wall often is wanting, that deviations in the electrocardiogram may not occur, that the silhouette in the roentgenogram may be variable in different cases, but experience has shown that where polyserositis results in cases of decompensated circulation, adherent pericardium must be suspected. Here again the roentgenologist comes to our assistance and Dr. Sosman of the Brigham Hospital has repeatedly demonstrated to us this year not only calcified plaques in the pericardium but actual calcification in diseased cardiac valves. Experience has already shown that the operation of cardiolysis, or freeing the pericardium from the immovable overlying bony cage by removing the ribs, is not nearly so efficacious as actually removing the constricting pericardium itself. Indeed, failure to improve the patient's circulation by the operation of cardiolysis has perhaps been a deterrent in submitting other cases to surgery. It is possible that had these patients upon whom the latter operation was performed been subjected to removal of the pericardium (the Delorme operation) rather than to cardiolysis (the Brauer operation) the surgical treatment of adherent pericardium would today be on a more secure footing in this country.

As regards disorders of the heart itself, we must look again to trauma for the original stimulus which led the surgeon to this organ. Fortunately even the physician cannot criticize the surgeon for operating upon wounds of the heart and pericardium. There is no other therapy. The fact that prior to the first successful case in 1896 there were but a few recoveries, that the first group of collected cases in 1896 (134 cases) showed a 38 per cent recovery, and that now the most recent figures compiled by me between the years of 1920 and 1926 show 78 per cent recoveries, speaks for itself.

I must now bring before you ideas concerning the relief of pain in angina pectoris by surgery. Whether the interruption of the nervous arc by alcohol injections at the posterior ganglion, or whether division of the connecting rami between the upper dorsal ganglia and the cord, or whether simple interruption of the motor pathways from the ganglia to the heart is more efficacious one than the other in the relief of these painful seizures is not within our province for discussion today. That much relief has been brought to a selected type of patient, who has substernal pain of cardiac origin, there can be no question.

Finally in this field we must consider the possibility of bringing relief to stenotic valvular disease by surgery. It was this fragment of intrathoracic disease which first drew my interest and from this beginning I have slowly invaded all the other thoracic viscera. I have thus been privileged to watch as an inside observer the many additions to this great field for surgical therapy. Whether or not the ingenuity of the surgeon will ever allow him to benefit humanity by some procedure calculated to turn a stenosis into an insufficiency cannot be stated today, but to those interested in thoracic surgery it must remain as one of the landmarks from which a further step into this field may progress. In grateful recognition and praise for the admirable internists who have encouraged me through this difficult and trying period of cardiac surgery, I am glad to make the announcement that in only one case out of the nine operated upon did their diagnosis fail of full substantiation. This is more than a creditable matter, for it points to at least one valuable stimulus from the surgeon. Heretofore the accuracy with which chronic valvular disease was diagnosed mattered but little since therapy, largely rest and digitalis, was the same, but now if the surgeon is to share in this matter, ab-

solute accuracy in the diagnosis is essential, for it would be a sorry and unfortunate circumstance were one to operate, for example, for mitral stenosis, risk the patient's life, and then find the condition not present.

This same stimulus for accuracy in diagnosis bedevils the surgeon's life. His sins are those of commission, and he cannot escape punishment if he makes a mistake. He does not like to open the right abdomen if the disease is on the left side; he feels very badly if the cranial opening is above the tentorium and the tumor below this bothersome diaphragm. So the entry of the surgeon into the thorax has been a stimulus toward more specific diagnoses as well as more early diagnoses.

All of you here, though I am sure not agreeing with my ambitions for surgery in this special field or the limitations which I have put upon this field, will see that the surgeon, often accused of being meddlesome and hasty and of risking too easily the patient's life, has already done a great deal to benefit our knowledge of certain disorders within the thorax. That the field will be extended, that many patients will be benefited by this advance, there can be little doubt. Stephen Paget's book, "Surgery of the Chest," written in 1896, contains the following statement: "Surgery of the heart has probably reached the limit set by Nature to all surgery: no new method, and no new discovery, can overcome the natural difficulties that attend a wound of the heart." That is about all there was in 1896 to write about the surgery of the heart. It is a different story today and we are in a position where, without implied criticism of a great master, we can truly feel that Billroth also erred and probably exerted a deleterious effect upon the advance of surgery by the published statement that "no surgeon who wished to preserve the respect of his colleagues would ever attempt the suture of a wound of the heart."

I wish now to discuss briefly some of the historical background which has given to those of our generation the tools with which we can carry out the therapy already suggested in the first part of this discourse. This background begins with what was learned by trial and survival; it takes us into the laboratories of anatomists, physiologists, and pathologists, and, to the surgeons' credit, into the operating rooms where some, at least, of the body of medical knowledge has had its origin.

I have already hinted that the problems confronting mechanical therapy within the thorax were largely of two orders, one the risk attendant upon an open pneumothorax such as occurs when one makes an opening for any intrathoracic procedure, and two the difficulties due to the absence of high bacterial immunity. It would seem that though difficulties dependent upon an open pneumothorax have long been the chief concern of people interested in this field, empyema, and indeed its treatment by surgery, was known to the ancients. Hippocrates advised its drainage, but even Hippocrates also noted that compound fractures of the bony cage of the thorax, in which the condition of pneumothorax occurred, thereby destroying the normal mechanism for respiration, bore the gravest consequences. The ancients thus distinguished between the effects produced by an opening into a normal pleural space and into a pleural space in which the effect was limited by preceding disease. The danger of an open pneumothorax was clearly known to Celsus who, in a critical essay on the practice in vogue in Alexandria in the third century before Christ, of utilizing living criminals for extending medical knowledge, stated: "It is indeed true that the abdomen, with which our argument is less concerned, can be opened while a man yet lives, but as soon as the knife reaches the thorax, and cuts the transverse septum, which is a membrane dividing the superior parts from the inferior and called diaphragma by the Greeks, the man at once gives up the ghost, and thus it is the breast and viscera of a dead and not a living man which the murderous physician examines. He has thus but performed a cruel murder, and has not learned what the viscera of a living man are like." This danger of an open pneumothorax in the days when surgery was in its childhood left this great field an unopened book until our own time.

It is true that those interested in the historical background of the present surgical means for treating pulmonary tuberculosis may point to the fact that Carson of Liverpool as early as 1821 was urging the production of an artificial pneumothorax in the treatment of this disorder. We know that Forlanini in 1882 reproposed and advocated the same therapy and we know that John B. Murphy of Chicago derived a goodly part of his early professional recognition from urging the same matter, a step which led him not long afterward to state that possibly intrathoracic surgery might have a wider application than then existed.

It is further true that as early as 1879 Estlander had suggested collapsing operations for the treatment of chronic empyema. The experiences of Estlander and Schede in this matter of external collapsing operations led Fowler in 1893 and Delorme in 1894 independently to suggest decortication of the lung in cases of chronic empyema. Meanwhile, as early as 1885 de Cérenville, and in 1888 Quincke, commenced the removal of ribs in the apical portion of the thoracic cage in the treatment of apical tuberculous abscesses.

These operations, however, were quite local and it was not until Brauer of Marburg pointed

out in 1909 that the success of collapsing operation depended upon real pulmonary compression, similar in fact to that produced by artificial pneumothorax, that the modern complete collapsing operations for the treatment of pulmonary tuberculosis commenced. He suggested the removal of fragments of many ribs. The first operation of this type was undertaken by Friedrich in 1907. The first patient survived operation and fourteen months later his pulmonary condition was greatly improved, a matter of some importance following such a radical performance. Gradually Brauer and Friedrich perfected and extended their collapsing procedure but since the operation consisted of the removal of great segments of many ribs, it became an increasingly stupendous undertaking. Curiously, there had lain unused the remarkable thesis of Boiffin and Gourdet of Nantes published in 1895, in which there was carefully pointed out and proved by experimental studies that for a great collapse it was necessary to remove merely a small section of ribs close to the vertebral border. Sauerbruch had performed such a paravertebral thoracoplasty in 1909, but it was Wilms of Heidelberg, beginning about 1911, who demonstrated the really great value of the simplified paravertebral thoracoplasty procedure. Gradually Wilms and Sauerbruch, quite independently, developed and perfected this paravertebral operation. Such a procedure is the one now in common use and it has been increasingly evident that it is not the length of rib removed that is important, but the removal of a segment close to the vertebral column and especially of the upper ribs that results in the maximum collapse. When adequate collapse has been obtained in properly selected cases, the results have been almost miraculous and testify to the real rôle of the physician, that of helping nature, not of trying to lead her.

Meanwhile, other external procedures had been going on. Tuffier developed localized extrapleural pneumolysis for localized pulmonary tuberculosis. In 1911 Stuertz proposed phrenicotomy as of assistance in producing collapse. A different note was struck by Jacobaeus of Stockholm, who devised an ingenious method in which a thoracoscope and a separate instrument carrying an electric current for cauterization purposes permitted him to divide narrow intrapleural adhesions so that simple pneumothorax could be made efficacious even in the presence of adhesive pleuritis.

All of this development, however, as you will see has carefully avoided the matter of the open chest preparation and we must look back to the study of the development of an apparatus for mechanical respiration in order to discover the chief prop upon which thoracic surgery today depends. The first attempts to counteract pulmonary collapse with an open chest preparation were made independently by Quenu and Tuffier in 1896. Thus to the French school of surgery we really owe the secret of opening the thorax to the surgeon's eye. Quenu and Longuet developed a helmet much after the fashion of a diver's helmet which could be fitted snugly over the patient's head and in which a positive pressure was maintained sufficient to keep the lung expanded when the chest was opened. In the same year Tuffier and Hallion suggested the introduction of a tube into the trachea by way of the larynx into which air could be blown from a bellows, which is essentially the method of intratracheal insufflation perfected in 1909 by Meltzer and Auer of New York City. Still later Meltzer demonstrated that simple intrapharyngeal insufflation was effective. Matas in 1899 had introduced the method of Tuffier to this country, and his colleague, Parham, in 1898 reported the removal of a tumor of the chest wall in which such an apparatus was used, this operation constituting the first real intrathoracic operation on record in this country. F. T. Murphy of Boston, while working in the Medical School here at Harvard, suggested in 1905 the use of a positive pressure box fitted over an animal's head similar in purpose to the original helmet-method suggested by Quenu. While these suggestions for insufflating the lung by positive pressure were going on, the German school of surgery developed the negative chamber. This consisted of placing the patient and the operators inside a chamber in which the pressure was maintained at a negative level, the patient's head being outside the chamber. Such a method kept the lung expanded during operations within the chest. The difficulties attendant upon such a method, with the anesthetist outside and the operator inside, a psychological barrier circumvented by telephone, led to the abandonment of such rooms (though several were established in this country) as soon as Meltzer and Auer perfected the simple intratracheal insufflation method.

It had already been shown that merely blowing in the anesthetic vapor under a slightly increased pressure was sufficient to keep the lung expanded. These investigators demonstrated that if the positive pressure was interrupted from time to time, allowing the lung to collapse and fill at regular intervals, the patient was kept in a better condition than when those methods were used in which the lung was kept either sucked out in a negative pressure chamber all the time or blown out by continuous positive pressure. And, finally, it is common knowledge today that any form of snugly-fitting face-mask connected to a gas-oxygen anesthetic machine, or even a catheter in the pharynx with the lips held closed, is a perfectly satisfactory method

for keeping the lungs expanded with the chest widely opened. It is only proper to state, however, that some interruption of the anesthetic stream to ensue regular emptying and filling of the lung assists in protecting the normal respiration and circulatory mechanisms.

Many here who have had experience with the modern type of mechanical respirator, such as that developed by Mr. Philip Drinker in the Harvard School of Public Health, or by Mr. John Emerson in Cambridge, Massachusetts, and utilized largely in the treatment of poliomyelitis when the cervical cord is involved, may fall in with the most recent suggestion that the old negative chamber apparatus may again see its day in this country. A negative chamber built on the principle of these mechanical respirators, in which there is an automatic regular shift of decreased pressure, would give ideal conditions for intrathoracic work. My own laboratory work as well as clinical experiences, extending now over at least ten years, have confirmed me in the belief that the deleterious effects of the open chest preparation are due largely to the effects produced upon the circulation. Experimentally these deleterious effects appear even when the lung is kept expanded by a positive pressure machine unless there is interruption of the expansion of the lung by a regular fluctuation in the pressure delivered. The surgeon should recall that with the open chest preparation, which does away with negative pressure, the suction action of differential pressure is destroyed and that, therefore, the return of blood to the heart, which in considerable part is due to this negative-pressure suction action, is impeded. If the lung is kept continuously distended, either by a positive pressure or by a negative pressure, there will occur over a considerable period of time gradual evidence of circulatory failure. If, however, the lungs are kept in alternate distention and collapse by some form of interrupted pressure apparatus, the circulation will tolerate many hours of the open chest preparation without showing any signs of failure. It is as if the alternate distention and collapse of the lung acted somewhat as a pump, effecting not only a better circulation through the lungs, but probably in turn effecting also the ease with which blood gets out of the right heart and therefore, as secondary to it, leaving space for the entry of blood into the right heart. There has been reported experimental evidence by Dr. C. S. Beck, a former colleague of mine, to show that under the conditions of long-standing atmospheric pressure upon the heart, such as occurs when a permanent fistula between the outside world and the pericardial cavity is maintained, the cardiac output is actually diminished. This work has now led to the proposition that when times permit the construction of such a "respirator-chamber," we shall further lessen the risk to our patients on whom intrathoracic procedures are necessary.

Having now at hand a safe method for operating within the thoracic cavity, we have but to apply this to any condition for which the mechanical therapy of surgery may bring relief. Most of these conditions have already been enumerated. Intricate technical steps in the carrying out of any one procedure, such as how best to treat the stump of an amputated pulmonary lobe, or how best to remove a fragment of esophagus from the posterior mediastinum, are not proper details for this discourse. It, however, should be pointed out that dating back to the early experiments of Tuffier and later of his pupil, Alexis Carrel, now at the Rockefeller Institute, New York City, we have learned much concerning the additional requirements of perfect asepsis in the conduct of intrathoracic operations. The pleura has but little local immunity toward bacteria, a far different immunity from that given to the peritoneum and comparable perhaps to that within the cranium. This, however, is merely a matter of technique and the surgeon of today, brought up to a proper aseptic conscience and surrounded by perfected methods for the sterilization of everything which is to enter the wound, should not fear infection. The good surgeon has learned not to say "I am sorry." It does no good to be sorry when an error has occurred, and since the surgeon bears on his shoulders always sins of commission rather than omission, he is apt to take all the necessary precautions to safeguard his patient.

In relation to the surgery of the heart and pericardium, which of course could not occur without these other matters having been first unravelled, there are additional technical difficulties, and, above all, there was at one time a great psychological barrier. You all know enough of the history of our background to appreciate that at one time the spirit was thought to reside in the heart, and for at least a thousand years it was held that anything which affected the heart resulted in immediate death. This held so strong a seat, even in the minds of the best men of that day, that when Ambroise Paré, who witnessed a duel between two gentlemen at Turin, reported that the man who had been killed had been run through the heart with a rapier and had subsequently run two hundred yards before he fell down and died, the court held that Monsieur Paré must have been mistaken because if the postmortem showed an injury of the heart, the man must have died instantly and could not have run the two hundred paces. In the face of such a general feeling, it is obvious that even the literature of forty years ago does not concern itself with cardiac surgery except to cite the background upon which this development was to occur. Gradually,

however, data relating to the resistance of the heart to trauma were accumulated. It came to be known that animals killed in the chase showed arrowheads or bullets encysted in the myocardium which had been resident there perhaps for a year or two, from the time of a hunt in which the beast had been wounded but had escaped. Commencing with the report of Bloch in 1882, experimentation showed that wounds of the heart healed much as wounds elsewhere and the way was open for an attempt to suture a wound of the heart in man. At the same time, our physiological colleagues began to study the heart under experimental conditions. Klebs in 1875 constructed a tiny knife which he passed down the jugular veins and carotid arteries to tear out or cut cardiac valves so that he could study the alterations in the circulation. Cohnheim in 1877 reported similar investigations and Ottomar Rosenbach in 1889 made a close study of the circulation after injury to certain of the valves within the heart. How recent is all this is visualized by a discussion which I once had with Dr. Welch of Baltimore, whose sobriquet of "Popsy" is so well deserved. When I mentioned the name Rosenbach he said: "Dear me, Cutler! He is not an old man. He and I sat at the same desk in Cohnheim's laboratory!"

I should not, however, give all credit to our experimental laboratory colleagues, for the very first experiments of the nature enumerated above were made by Becker, an ophthalmologist who, being interested in the pulsation of the retinal vessels in cases of aortic insufficiency, in 1872 rammed glass rods down the left carotid artery of dogs and in certain cases was able to destroy an aortic cusp with the result that he could study in his animal the same retinal manifestations which he had seen in his patients. It was all this experimental background that gave Cappelen the courage to make the first attempt to suture a wound of the heart in 1896. His failure was followed by the first successful case reported by Rehn in 1897. Thus the road into the thorax was already established when in 1902 Lauder Brunton suggested that stenotic valves might be enlarged by surgery. Many young surgeons experimented with the possibility of suggesting a method and my own chief, Dr. Harvey Cushing, in collaboration with Branch, published a paper in 1908 on experimental valvular lesions in the dog. It was the accumulated experience of this type upon which we had to build when we undertook to elaborate a safe method for attacking disorders within the heart. The background was none too encouraging, but when it had been somewhat extended, a method was eventually perfected that permitted us to travel a new road with some confidence and safety.

The beginnings of any subject lead one to ever narrower and more numerous pathways. The development of methods for cardiac stimulation in cases of suspended animation, a happening that unfortunately troubles the surgeon from time to time, especially with chloroform anesthesia, has led to much study. Not until Schiff in 1874 suggested cardiac massage was any progress made. But this suggestion bore no fruit until the report of its successful use by Starling and Lane in 1902. If the thorax is open, the pericardium is accessible; if the abdomen is open, the diaphragm at the point of the pericardial attachment may be pierced to allow the hand to approach the heart. The compression of the heart should be gentle and at the rate of about thirty times a minute. In 1924 Lee and Downs reported one hundred and one cases, of which twenty-five were successful. It is an alarming manipulation, but the thoracic surgeon must be familiar with this also, though he should first essay the dropping of one cubic centimeter of 1:1000 epinephrine on the heart or the injection of this same amount into the heart, as this simpler stimulus may be efficacious.

Another fragment of our background is seen in the development of the surgery of the pericardium, though this covering of the heart finds its beginnings, as a whole, to go hand in hand with the historical development of cardiac surgery. Galen recognized pericarditis in animals; Riolan in 1649 recognized the condition in man and boldly suggested drainage through a trephine opening in the lower sternum. Morgagni in 1761 described how the great danger of pericardial effusions lay in their effect upon the action of the heart. Baron Larrey, Napoleon's surgeon, reported the first wound of the pericardium to recover, and Romero in 1819 performed the first successful pericardiostomy. Romero's patient suffered from an effusion and it was Hilsmann who in 1844 performed the first operation for suppurative pericarditis. These sporadic attempts of over one hundred years ago bore little fruit, perhaps because the great Billroth again threw his influence against procedures on the pericardium, characterizing paracentesis of this sac as a surgical frivolity and a prostitution of surgical skill.

Real stimulation to a further comprehension of the relationship of the pericardium and the heart only came with the splendid presentation by Rose in 1884 of Herz-tamponade. Rose demonstrated that increasing intrapericardial pressure could actually strangle the heart and both he and Cohnheim in 1889 pointed out the danger to the circulation of an increasing intrapericardial pressure which, as it approaches the pressure in the venae cavae and right auricle, eventually prevents blood from entering the heart. It was this physiological consideration that demanded surgery in the treatment of all small wounds of the heart where blood might leak from a ventricle and become trapped in the pericardium until as the intrapericardial pressures rose, the heart was strangulated by its own efforts. And it is similar physiological

considerations that explain the deleterious effect of an adherent pericardium and indicate the relief which may accrue if this constriction is removed.

Such, my friends, is a little of the background upon which we strive to draw a few lines. The beginnings which have led surgeons into the thorax are in part before you. The experience others have left us, and especially the suffering which all this experience has meant, for much of it transpired long before the days of anesthesia, should make us eternally grateful to our professional forbears and should make us guard carefully the ways such knowledge is both used and neglected.

As doctors, we only serve our own consciences and our traditions. Both of these urge us daily to set before our patients all the means our profession provides for their care. I have tried to point out today the many conditions within the thorax for which our profession is called upon to give relief. In these conditions the surgeon and the physician must sometimes go hand in hand and sometimes singly. They will always need the roentgenologist with them. It is my hope that an enumeration of what surgery might do, with a statement of enough of the history of how the intrinsic difficulties of this field have been overcome, would actually benefit patients who shall come to you. I speak of that field for the surgeon most recently come to his hands. There is not as yet great experience, for the pioneers in this branch of surgery are still at work. Some of the conditions mentioned may in the light of subsequent experience be better treated by methods other than surgical, but it should be clear to all practitioners that thoracic surgery is now an established fact so that patients with intrathoracic conditions may have a hope extended to them impossible but a decade or two ago.

THE AWARD OF THE CHALMERS GOLD MEDAL

The gift of the Chalmers Gold Medal by the Royal Society of Tropical Medicine and Hygiene of England was planned for award June 15, the recipient being Dr. Saul Adler, Professor of Parasitology at the Hebrew University, New York City, according to Dr. A. S. W. Rosenbach, President of the American Friends of the University. The occasion of the award is the annual meeting in England of the Council of the Royal Society. As Director of the Kala-Azar Commission of the Royal Society for 1930-32, Dr. Adler undertook researches in Italy and Malta under the joint auspices of the Hebrew University and the Royal Society, in the tropical diseases in which he is said to have done outstanding work. Earlier this year, he was awarded a Laveran Medal by the Société de Pathologie Exotique (The French Society of Tropical Medicine).

"In a neglected semi-tropical country such as Palestine," said Dr. Rosenbach, "there are diseases which do not exist in temperate countries and climatic and other factors affect the epidemic character of infectious diseases and the resistance or the susceptibility of the population to them. Furthermore, the resettling in Palestine of a large body of people accustomed to live in a temperate climate involves other problems which the Department of Parasitology is endeavoring to solve."

Kala-Azar and its transmission through the sandfly, Jericho Boils, a disease seemingly peculiar to Palestine, the study of worms affecting man and animals in Palestine, and the relation of birds and fish in the transmission of such infectious diseases are the chief problems studied in the Department of Parasitology, according to Dr. Rosenbach. Kala-Azar, in which Dr. Adler has conducted his chief research, is prevalent in India and China, occurring in the form of infantile Leishmaniasis in the Mediterranean countries. It is thought by scientists to be transmitted by the sandfly. Although only 38 years old, Dr. Adler's intensive studies of the species of sandfly occurring in the Near East and Mediterranean countries have won him international recognition. He joined the staff of the Hebrew University when the first Institute was opened in 1924. During the late war, Dr. Adler (a graduate of Leeds University, England) was a captain in the Royal Army Medical Corps, serving in Palestine and Mesopotamia with the British Army. Previous to his appointment to the Department of Parasitology at the Hebrew University, he was engaged in scientific research on the Gold Coast at Sierra Leone, Africa.

The Daniel Sieff Research Studentship in the Department of Parasitology, gift to Dr. Chaim Weizmann, President of the Hebrew University, and former President of the World Zionist Organization, is also announced by Dr. Rosenbach. The sum of £200 annually has been provided for research work in the department, under the general supervision of Dr. Adler.

"ALCOHOLIC" POLYNEURITIS; DIETARY DEFICIENCY AS A FACTOR IN ITS PRODUCTION*

BY GEORGE R. MINOT, M.D.,† MAURICE B. STRAUSS, M.D.,† AND STANLEY COBB, M.D.†

INTRODUCTION

ONE hundred and one years ago there appeared in this *Journal* James Jackson's[1] classic description of alcoholic neuritis under the title, "On a Peculiar Disease Resulting from the Use of Ardent Spirits", with the running title on the top of the pages, "On Arthrodynia a Potu." In this article one may read "The functions of the stomach are always impaired and generally very much. The appetite is lost or is morbid . . . and constipation and diarrhoea take place." Under treatment Jackson noted ". . . animal food most useful." He apparently was not aware of the fact that John Coakley Lettsom[2], in an article entitled "Some Remarks on the Effects of Lignum Quassiae Amarae," published in 1787 the first definite description of what is now known as "alcoholic polyneuritis," and that Lettsom also wrote on this subject in tracts published later[3]. Lettsom describes the first symptom as dyspepsia and notes "the appetite for food vanishes." He wrote, "the sufferers are often those of the more delicate part of the female sex" and Jackson also noted the condition as more common in women. Lettsom's description, in part, reads: ". . . the lower extremities grow more and more emaciated; the legs become as smooth as polished ivory, and the soles of the feet even glassy and shining and at the same time so tender, that the weight of the finger excites shrieks and moaning; and yet I have known, that in a moment's time, heavy pressure has given no uneasiness. The legs and the whole lower extremities lose all power of action; wherever they are placed, there they remain till moved again by the attendant. . . . Thus for years they exist. . . ." Farther on one reads of pathetic people with much pain "for some months before they die."

These two initial communications, like many subsequently, record the frequency of disorders of food intake and digestion among sufferers from alcoholic polyneuritis, but naturally enough do not consider the possibility that deficient nutrition may play a rôle in its production. In fact, except for beriberi, there is only brief mention in the literature, of the rôle that dietary deficiency can play in the production of multiple neuritis in man. For example, Shattuck[4] has suggested this possibility on a theoretical basis and Minot[5] has alluded to the subject. Within the past year Meyer[6] has studied several cases of alcoholic polyneuritis with the concept in mind that dietary deficiency was a factor in its production. The "toxic" polyneuritis of pregnancy has been recently considered[7] as a dietary deficiency disorder. On the medical and neurological wards of the Boston City Hospital we have studied this aspect of alcoholic polyneuritis during the past five years and our observations and views concerning the subject are presented in this paper.

CERTAIN ASPECTS OF DIETARY DEFICIENCY

Before presenting these observations, certain aspects of dietary deficiency disorders, especially those resulting from the lack of vitamin B, require mention in order to make clear our conceptions concerning dietary deficiency in relation to alcoholic polyneuritis. Symptoms due to a deficiency of a nutritional factor may arise from the failure to ingest an adequate amount of that substance, but at least many weeks are required before a healthy individual will develop symptoms clearly dependent upon such a lack. Partial dietary deficiency may result from a prolonged departure from an optimal diet without the development of symptoms distinctive of a particular syndrome. When such is the case, however, the occurrence of adverse factors, such as infection and intoxication, may precipitate diseased states clearly recognized as produced by the lack of one or more nutritional factors.

Thus, in considering whether dietary deficiency exists in a given case, careful attention must be paid, not only to the dietary habits of the individual during a period of at least several months, but also to any existing conditions known to inhibit the effect of nutritious elements. Arteriosclerosis, infection and chronic poisoning are numbered among these conditions. One must also recognize that dietary deficiencies can develop because of disorders of the gastro-intestinal tract. Necessary material may not be properly elaborated because of a lack of gastro-intestinal secretions, as occurs in pernicious anemia, or nutritious elements may be absorbed unsatisfactorily, leading to a state of deficiency exactly as if an insufficient amount of proper food had been ingested. The presence of gastric anacidity or states associated with it seems to be definitely a factor in enhancing the development of certain deficiency disorders, and this, as well as all aspects of the gastro-intestinal

*From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), and the Neurological Unit, Boston City Hospital and the Departments of Medicine, Neuropathology and Tropical Medicine, Harvard Medical School, Boston, Massachusetts.

†Minot—Professor of Medicine, Harvard University. Strauss—Assistant Resident, Thorndike Memorial Laboratory. Cobb—Visiting Neurologist and Director of Neurological Laboratories, Boston City Hospital. For records and addresses of authors see "This Week's Issue," page 1269.

tract, should be considered in attempting to determine whether dietary deficiency may exist in a given case.

In searching for symptoms of dietary deficiency it must be remembered that man seldom chooses his food so as to create a condition due to the deficiency of only one substance. Thus, if it is suspected that certain symptoms are dependent on the lack of one dietary factor, the physician must be alert to discover whether there are not other symptoms attributable to the lack of other factors.

The similarity of the symptomatology and pathology of the multiple neuritis of beriberi, due to a lack of vitamin B_1, and of alcoholic polyneuritis, leads one to question whether these two conditions do not have a common etiologic basis comparable to the common basis of endemic pellagra and "alcoholic" pellagra. There are cases of polyneuritis, resembling beriberi, of which we have seen several examples, where a lack of absorption of vitamin B_1 could readily be attributed to a gross disorder of the small intestine; for example, dependent on chronic diarrhea following the removal of several feet of the small intestine. There has also been observed in Boston a group of patients with polyneuritis in the absence of alcoholism, infection or exposure to lead or other known poison, who had had a grossly abnormal diet for a long time, often associated with some defect of gastro-intestinal function. These patients improved relatively rapidly upon eating appropriate food.

With these aspects of dietary deficiency and the relation of vitamin B_1 to multiple neuritis in mind, we present our observations and views concerning "alcoholic" polyneuritis in relation to deficiency of dietary factors.

OBSERVATIONS

Fifty-seven patients with undoubted "alcoholic" polyneuritis, who had gastric analyses performed or adequate dietary histories taken, and usually both, have been observed. In addition, we have examined the records of 73 additional cases without data concerning gastric secretions or dietary habits. The records have supplied data concerning age and sex incidence and the time of year when the neuritis appeared; thus giving 130 cases for such statistical information. All of these patients had consumed alcohol, usually for many years, in excessive amounts, especially of the type called "ardent spirits" or hard liquor.

AGE INCIDENCE

The ages of the 130 patients varied from 23 to 68 years; their average age was 44 years. There was no evidence of a particular age incidence.

SEX INCIDENCE

There were 107 males and 23 females. There is evidence from the literature that at least prior to 1890 the condition was definitely more common in women than in men. The cause for the change in the frequency with which the sexes develop "alcoholic" polyneuritis may be attributed to changes in social customs, but speculations will not be entered into here.

TIME OF ONSET

The distribution of the cases according to the time of year when clear-cut symptoms of neuritis began, is shown graphically in Chart I. The

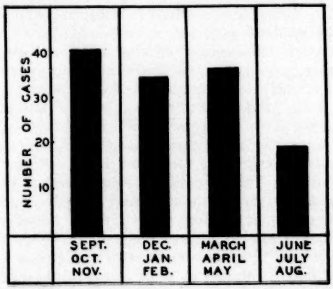


CHART I. Seasonal Distribution of Onset of "Alcoholic" Polyneuritis in 130 Cases.

number of cases that commenced in the summer months of June, July, and August is approximately half that for any other three consecutive months of the year. This is of interest in view of the fact that in the temperate zone the known dietary deficiency disorders rarely arise in the summer months.

There are several factors that may contribute to this seasonal incidence. Perhaps warm weather causes the individuals to drink less hard liquor than cold weather, and there may be less inducement to sit indoors and drink when the weather is mild. Sunlight might play a rôle. It is rather easier to obtain fresh food in the warmer than the colder months, not only because of supply, but because a slothful individual finds it less difficult in summer to go about in the open air to visit places where he can readily obtain fresh food, while in the winter living on grocery store supplies at home takes less effort. Although these conditions may play a rôle, it is suggested that of greater importance is the frequency of upper respiratory tract and other infections in the colder months of the year. In a considerable number of cases, an infection occurred in association with the onset of the polyneuritis. Numerous physicians have commented on this influence of infection in precipitating "alcoholic" polyneuri-

tis, but they have not related it to a nutritional state. Parkes-Webber[8] considers that alcohol is merely a predisposing agent, and that neuritis of the alcoholic type is essentially due to infection. He formulated this idea when the newer knowledge of nutrition was in its infancy. Infections can precipitate in persons whose nutrition is in a partially deficient state, symptoms of frank deficiency. It is, thus, plausible that infections can enhance the development of polyneuritis in the alcoholic patient whose nutrition is deficient by hindering the action of nutritional factors such as vitamin B_1.

DIETARY HISTORIES

The difficulties involved in obtaining adequate dietary histories from a group of chronically excessive imbibers of alcohol need not be enlarged upon here. With the aid of the family and friends, however, together with a survey of the social and economic status of the patient, it was possible to formulate the usual diet of 43 patients. Two only had partaken of diets which could be considered adequate, if not optimal for nutrition. The remaining 41 patients had eaten for at least many months, and usually for several years, only very little fresh food of any kind and almost always sparsely of foods rich in protein. In many instances the diet had been deficient in calories as well as in protein, minerals and vitamins, so that from 20 to 40 pounds loss of body weight prior to hospital admission was common. When the caloric intake from food —not alcohol—was sufficient, it was chiefly derived from concentrated carbohydrate foods. A typical dietary history shows, in addition to alcoholic beverages, coffee with sugar and doughnuts for breakfast; soup, bread, butter, pie, and coffee for lunch; and for supper a large dish of spaghetti with bread, butter, coffee, and rarely a little meat, poultry, fish or eggs.

The lack of appetite and frequently concomitant nausea and vomiting with gastritis and sometimes diarrhea, also contributed to a state of dietary deficiency. The nutritional state of these patients is thus one of at least partial deficiency at the time multiple neuritis appears.

GASTRIC SECRETION

Fractional gastric analyses were performed on 43 patients. During the first years of this study the Ewald test meal was used. Later 50 to 100 cc. of 7 per cent alcohol were employed as a stimulus to gastric secretion. Histamine was injected subcutaneously when there was no secretion of free hydrochloric acid within 40 minutes after the administration of the alcohol in 14 cases.

Only seven of the 43 patients secreted normal amounts of hydrochloric acid in the gastric juice. Fifteen more secreted distinctly diminished amounts of free hydrochloric acid as compared to normal averages for the test stimulus used, and 21 patients secreted no free hydrochloric acid whatsoever. The gastric secretion of 10 of these 21 patients was examined after both a test meal and the injection of histamine, the remainder only after a test meal. This 50 per cent incidence of gastric achlorhydria and 33 per cent incidence of gastric hypochlorhydria (Chart II) is for comparison with an expected

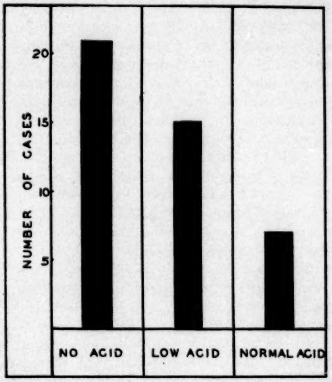


CHART II. Gastric Analyses of 43 Patients with "Alcoholic" Polyneuritis.

12 per cent of gastric anacidity in a group of normal individuals of this age group and sex ratio. (Calculated from data of Bloomfield and Polland[9].)

It may be argued that this incidence of achlorhydria and hypochlorhydria is merely characteristic of chronic alcoholism, and such may be the case. Although many cases of chronic gastritis are ascribed to alcoholism and may show deficiency of free hydrochloric acid secretion, we have been unable to locate significant statistical data concerning the state of the gastric secretion in chronic alcoholism. However, Merritt and Moore[10] reported gastric analyses of eight patients all of whom gave a history of chronic alcoholism. Seven of the eight showed normal amounts of free hydrochloric acid in the gastric juice, and only one had achlorhydria. This suggests that the incidence of deficient hydrochloric acid secretion in cases of "alcoholic" polyneuritis will be found greater than in simple chronic alcoholism. Let this be as it may, it is evident that the patient with "alcoholic" polyneuritis abnormally frequently has achlorhydria, a condition which is associated perhaps with the development of certain deficient states such as pernicious anemia, pellagra and sprue, in which gastric anacidity is encountered respectively in about 99 per cent, 64 per cent and 50 per cent

of cases[9]. Pellagra is associated with a lack of vitamin B_2 and some similar or associated factor may be involved in pernicious anemia and sprue.

In endemic beriberi in the Orient *which can be entirely accounted for by a lack of vitamin* B_1 in the diet the incidence of gastric anacidity is, however, no greater than would be expected in this age group[9].

Gastric anacidity or hypoacidity is so frequently found in idiopathic hypochromic anemia intimately associated with iron deficiency that some physicians have preferred to call the condition "simple achlorhydric anemia". The inhibitory effect of gastric anacidity upon iron absorption or utilization has been recorded and calcium absorption can also be affected adversely by this state of the gastric secretion.

ASSOCIATED DEFICIENCY DISORDERS AND COMPARISON TO BERIBERI

The close association in foodstuffs of the portions of the vitamin B complex known as vitamin B_1 (F) and B_2 (G) would lead one to suspect that if "alcoholic" polyneuritis was in a measure due to vitamin B_1 deficiency the patients might manifest some aspects of vitamin B_2 deficiency. It is, therefore, of interest to record that 14 of the 57 patients had dermatitis and other lesions characteristic of pellagra. There were other patients indeed with chronic intestinal disturbances and minor skin lesions that may have had a pellagrous etiology.

When protein deficiency is marked the plasma proteins are decreased and thus edema ensues. Bury[8] and other observers have recognized that edema may occur with "alcoholic" polyneuritis independent of heart, kidney, or liver disease, especially of the legs, and backs of the hands and sometimes widespread and erratically distributed. Years ago, such edema was considered a sign of "disease of the vasomotor nerves" but much more probably, like the edema in beriberi, it can be related to protein deficiency or perhaps directly to lack of vitamin B. Several of our cases had edema that could be related to protein deficiency although in only two such cases were the plasma proteins determined. In both they were abnormally low. Edema associated with organic disease of the heart was present in at least 6 of the 57 cases.

Another type of dietary deficiency also occurred among the 57 cases, namely, hypochromic anemia that could be attributed to iron deficiency. Commonly the hemoglobin was slightly reduced but in several cases it was less than 50 per cent of normal. In a patient, not included in this series and seen over ten years ago, with a history of chronic alcoholism, scurvy occurred in the presence of multiple neuritis.

Thus recognized food deficiency disorders, in addition to undernutrition due to insufficient caloric intake are not rare in patients with "alcoholic" polyneuritis. The simultaneous occurrence of pellagra is perhaps particularly significant and this alone favors the concept that dietary deficiency plays an important rôle in the multiple neuritis which develops in persons who chronically imbibe excessive amounts of hard liquor.

The comparison to beriberi can be drawn closer. In chronic alcoholism, as in beriberi, the symptoms are chiefly referable to the digestive, circulatory and nervous systems and in both conditions each of these groups of symptoms is met, either separately or combined. The digestive symptoms require no comment as the effect of alcohol per se can be held responsible and the multiplicity of symptoms could depend on many factors in a given case. Apparently the type of heart condition that arises in beriberi may occur in chronic alcoholism, and this may or may not be associated with multiple neuritis. Very slight degrees of neuritis have been noted by us and other observers in cases of chronic alcoholism where gastric and cardiac symptomatology have predominated. In one of our cases with definite polyneuritis, signs of rather acute myocardial failure vanished rapidly with no other therapy than rest in bed, a little food, and large amounts of a concentrate of the vitamin B complex.

SYMPTOMATOLOGY

The characteristics of "alcoholic" polyneuritis are a predilection for the legs, intense pain, deep tenderness, hypesthesia of the skin, and atrophy of the muscles with fibrous contractures. As in other forms of neuritis the onset is insidious; tremor, instability and muscle cramps are the precursors of foot drop or wrist drop; paresthesia, and neuralgic pains precede the anesthesia, especially plantar hyperesthesia; loss of tendon reflexes can be observed when the motor weakness seems merely a muscular fatigability to the patient; the muscular atrophy appears later; skin atrophy, cyanosis and edema are also late signs.

A description of the "dry form" of beriberi as seen in the Orient could be almost identical, word for word, with the above, although the severity of the process and wider distribution over the body are conspicuous. In comparison, other forms of so-called toxic neuritis are clinically quite different. Lead causes a purely motor loss with earlier and more diffuse atrophy. "Jakey paralysis"[10] often begins with pain, but the motor symptoms are much more marked than the sensory. Arsenical poisoning usually attacks all four limbs, especially the hands; the tenderness, pain and atrophy resemble alcoholic neuritis. Carbon tetrachloride and trichlor-

ethylene cause purely sensory symptoms, the former attacking the hands and feet, and the latter the trigeminal nerve; methyl alcohol usually selects the optic nerve.

PATHOLOGY

The extensive early literature on "alcoholic" neuritis abounds in excellent descriptions of the atrophied muscles, the smooth shiny skin and the brittle, striated toenails. From the postmortem standpoint, however, the changes are poorly described, and few accurate histological examinations have been reported. Ross[11] in 1893 briefly describes three autopsies; it is interesting that he is able to give, with the crude methods of that day, quite a convincing description of swollen and degenerating myelin in the peripheral nerves. In one case the spinal cord was examined "and it was found that some of the ganglion cells of the anterior horns were probably somewhat destitute of processes", but no demyelination of the tracts was seen. Bury, who concluded Ross' fine monograph, states that nerve fibres may be diseased when no changes can be found in the ganglia or cord, but emphasizes that changes in the peripheral nerves may lead to lesions in the nerve centres—a forerunner of our present theory of the "axonal reaction" in nerve cells.

It is difficult to find in textbooks or monographs a good description of the histopathology of "alcoholic" polyneuritis. The brief notes when collected and summarized give a picture of early demyelination, with the degeneration showing best by the Marchi method of staining; later the axons are lost and the nuclei of the neurilemma sheaths increase in number.

Better descriptions are available of the pathological picture of beriberi neuritis, but most of these are based on experimental material. This work has been mostly done on pigeons and rats[12]. The histological changes seem to be exactly like those described in human "alcoholic" neuritis.

Better pathological work has been done on the changes found in the central nervous system following chronic alcoholism. Nonne[13] in a brief paper in 1907 tells of five autopsies. Two cases of chronic alcoholism showed loss of myelin in the dorsal columns of the spinal cord and in the periphery of the lateral columns. Neither of these cases showed any anemia. Two other more severe cases, however, showed marked anemia in the last months of life and the diagnosis of "Combined disease of the dorsal and lateral tracts due to alcoholism and secondary anemia" was made. At autopsy the diagnosis of the nerve disorder was substantiated. In a fifth case with conspicuous anemia outspoken "cord symptoms" developed; autopsy showed spinal cord changes typical of "combined system disease" but very little peripheral neuritis. He designates this spinal cord disease of alcoholics as "myelitis intrafunicularis".

August Meyer[6] believes that "funicular myelitis" is not uncommon in alcoholism and concludes that etiologically and pathologically one must consider beriberi and pellagra as closely related to this condition.

There are two recent papers on the cerebral changes in chronic alcoholism which stress the great degeneration of nerve cells found in Korsakoff's syndrome. Ohkuma[14] found these changes especially in the deeper cortical layers and mentions degeneration of the vessel walls and hemorrhages. Carmichael and Stern[15] describe five cases and stress the similarity of the microscopical pathology to that seen in pellagra; they suggest that a common factor may cause the two conditions.

These extracts from the literature on the pathology of alcoholism show how unsatisfactorily the field has been studied, but when viewed from the new standpoint of deficiency disease some order seems to arise out of the chaos. The pathology of one group of alcoholics closely resembles that of beriberi, where the lesions are essentially a degenerative neuritis of the long peripheral nerves. Another group, the Korsakoff syndrome, has a pathology much like pellagra, where nerve cell degeneration in the cerebral cortex is the conspicuous lesion. A third, less well defined and perhaps more rare has spinal cord lesions resembling those found in pernicious anemia[16]. Scurvy we have noted, and moreover it has been mentioned by Nonne and an analogy might be drawn between the vascular lesions of scurvy and those found in "polio-encephalitis superior" due to chronic alcoholism.

Obviously the old narrow classifications must be broken down, for cases of dietary deficiency disease are known to have all these lesions, and clinically the classifications no longer can be dogmatic. For instance, "alcoholic pellagra" and "alcoholic beriberi" are becoming accepted diagnoses. It is not a question of fine differentiation of syndromes, but a problem of broad understanding of the pathological process which is alike in all but variously localized. This localization of the process in different parts of the nervous system determines quite different symptoms. In other words the imbibing of alcohol may, by its effect on the digestive tract and the diet, precipitate neuronal degeneration (and perhaps vascular lesions) in brain, cord or peripheral nerves. If the process is largely in the brain and peripheral nerves, Korsakoff's syndrome results. If the brain is affected severely, with less degeneration of the cord and least in the peripheral nerves, the syndrome is that of pellagra. The converse of this picture is "alcoholic" polyneuritis, while Nonne's "myelitis intrafunicularis" is intermediate between these two.

TREATMENT

Forty of the 57 patients have been treated by a diet rich in complete proteins, minerals and vitamins. This daily diet has included about 150-250 grams of beef liver pulp, 200 grams of orange juice, 100 grams of muscle meat, 500 cc. of milk, and large helpings of fresh vegetables, fruits and butter. Concentrated carbohydrate food has been given sparingly. Daily about 60 cc. of cod liver oil and about 12 grams of autolyzed yeast or extractives have been given each patient, and iron when indicated. It is our distinct impression that under this régime recovery has been observed more uniformly and with greater rapidity than previously.

However, evaluation of therapeutic results in the absence of a "yardstick" to measure such results is notoriously difficult, and in a condition of as chronic a nature as polyneuritis where regeneration of nerve tissue occurs only slowly at best, it is hazardous to interpret what causes benefit. Since patients were admitted in all stages of the disease, and in all states of health, it was impossible to compare intelligently and statistically the results of treatment with special diets and those obtained in other ways. Furthermore, dietary treatment has been employed routinely in recent years so that comparisons could be made only with cases treated by other individuals, and there appears to be no published data for proper statistical comparison; while hospital records do not furnish us with satisfactory information for such a purpose.

CONCLUDING REMARKS

Alcohol itself may act not only as a poison to the nervous system, but may also act by diminishing the effectiveness of vitamins. This hindering effect might be brought about in several ways. Cowgill[17] has shown that the amount of vitamin B required by the organism is in some measure proportional to total metabolism. The consumption of much alcohol may lead to an abnormal increase of daily total metabolism, since a quart of whiskey furnishes at least 2800 calories so that an unusual demand for vitamin B might develop. The diets taken by our patients were obviously deficient in this vitamin complex; and this deficiency was present just when there was need for more vitamin B_1 owing to the increased metabolism. A similar effect is known to occur in beriberi. Exercise raises the metabolism and can precipitate the symptoms of beriberi in the individual who already suffers a partial deficiency of vitamin B_1.

The concept that dietary deficiency, especially the lack of vitamin B_1, plays an important rôle in the production of "alcoholic" polyneuritis is favored by the grossly deficient diets taken by the patients for a long time, and the similarity of the lesions and symptoms to those of beriberi. The seasonal variation, the precipitating influence of infection and the very frequent occurrence of achlorhydria is similar to what occurs in certain known deficiency disorders. Furthermore, pellagra and other dietary deficient states may occur in persons with "alcoholic" polyneuritis. If, as seems to us, a good diet rich in protein and vitamins causes more satisfactory improvement than any other form of therapy, it only strengthens the idea that a state of deficiency, probably especially deficiency of vitamin B_1, plays a rôle of importance in the production of polyneuritis in chronic alcoholism.

CONCLUSIONS

From observations on 57 cases and a study of the records of 73 additional cases, together with a survey of literature, it appears that dietary deficiency, probably especially the lack of vitamin B_1, plays an important rôle in the production of "alcoholic" polyneuritis. The deficiency can be attributed not only to inadequate intake but also to the state of the gastro-intestinal tract and the presence of factors that can inhibit the effectiveness of nutritional elements.

REFERENCES

1 Jackson, J.: On a peculiar disease resulting from the use of ardent spirits. New Eng. J. Med. & Surg. 11: 351, 1822.
2 Lettsom, J. C.: Some remarks on the effects of Lignum Quassiæ Amaræ. Mem. M. Soc. London. 1: 128, 1779-1787.
3 Minot, G. R.: James Jackson and alcoholic neuritis: a correction. Harvard M. Alumni Bull. 7: 54 (Apr.) 1933.
4 Shattuck, G. C.: Relation of beri-beri to polyneuritis from other causes. Am. J. Trop. Med. 8: 539 (Nov.) 1928.
5 Minot, G. R.: Some fundamental clinical aspects of deficiencies. Ann. Int. Med. 3: 216, 1929. Treatment of anemia, with comments on food deficiency and its relation to the nervous system. Tr. A. Neurol. A., p. 329, 1931.
6 Meyer, A.: Ueber das Vorkommen von B-Avitaminose unter den hiesigen Lebensbedingungen. Schweiz. med. Wchnschr. 62: 1243, 1932.
7 Strauss, M. B., and McDonald, William J.: Polyneuritis of pregnancy: a dietary deficiency disorder. J. A. M. A. 100: 1320 (Apr. 29) 1933.
8 Bury, J. S.: Multiple symmetrical neuritis. System of Medicine. Edited by Allbutt, C., and Rolleston, H. D. London, Macmillan and Co., Ltd. 7: 415, 1911.
9 Bloomfield, A. L., and Polland, W. S.: Gastric Anacidity: Its Relations to Disease. New York, The Macmillan Co., 1933.
10 Merritt, H. H., and Moore, M.: Peripheral neuritis associated with ginger extract ingestion. New Eng. J. Med. 203: 4 (July 3) 1930.
11 Ross, J., and Bury, J. S.: On Peripheral Neuritis. A Treatise. London, C. Griffin & Co., Ltd., 1893.
12 Ogata, T. S.: Reserat über die Reiserkrankung des Geflügels. (Kakkaähnliche Krankheit oder polyneuritis gallinarum.) Verhandl. d. Japanische path. Geselsch. 10: 1, 1920.
13 Nonne, N.: Anatomische Befunde im Rückenmark bei Alcoholismus chronicus gravis. Deutsche med. Wchnschr. 33: 166, 1907.
14 Ohkuma, T.: Zur pathologischen Anatomie des chronischen Alkoholismus. Ztschr. f. d. ges. Neurol. u. Psychiat. 126: 94, 1930.
15 Carmichael, E. A., and Stern, R. O.: Korsakoff's syndrome. Brain. 54: 189 (June) 1931.
16 On changes in the central nervous system in the neuritic disorders of chronic alcoholism. Cole, S. J.: Brain. 25: 326, 1902.
17 Cowgill, G. R.: Vitamin B in relation to the clinic. J. A. M. A. 98: 2282 (June 25) 1932.

Since this paper was prepared Wechsler (Arch. Neurol. & Psychiat. 29: 813 (Apr.) 1933) has published a paper on the "Etiology of Polyneuritis" with observations on the subjects of alcohol and deficiency.

CLINICAL MANIFESTATIONS OF EARLY CANCER OF THE BREAST*

With a Discussion on the Subject of Biopsy

BY FRANK E. ADAIR, M.D.†

IN the operable cases of breast cancer at the Memorial Hospital Clinic in New York City the five year cures average 40.6 per cent[1]. If the carcinoma is localized in the mammary organ itself, five year cures average 72 per cent. If the disease is present in the axilla as well as the breast (but with no evidence of cancer elsewhere) the five year cures tumble down appallingly from 72 per cent to 23 per cent. Obviously then, our great opportunity for the cure of this malady lies in attacking the diseases early; and this can be done only by the special education of women, and by an intense training of the medical profession in cancer diagnosis.

The patient must present herself to the physician at an *early* stage in the growth of the lesion if we are to succeed in increasing the number of lives salvaged. To do this I am convinced that women should be educated to make intelligent periodic examinations of their own breasts. Propaganda and education along this line should be vigorously pushed by our responsible medical societies. Every woman should be educated not only to palpate her own breasts occasionally for the presence of a lump but should be told to seek out her physician *immediately* if she finds one. If women would only come *early* to the physician for examination, much of the horror of this disease would disappear. The great obstacle today in the cure of breast cancer is not quite so much the inability of the medical profession to establish a working clinical diagnosis, or to effect a cure, as it is that patients' *neglect* to see their physicians even after they *know* that a lump is present. I feel that a greater advance in the cure of breast cancer will come as a result of self-education of women to feel their own breasts than by a further improvement on the present-day procedures of surgery or radiotherapy.

As a rule the public becomes educated in health problems in a surprisingly short time, once the vehicle of their education gets an impetus. This was effectively demonstrated in the tuberculosis problem. The facility and thoroughness with which the laity became educated in the early signs of tuberculosis have not only resulted in the saving of thousands of lives annually, but have proved that similar education along the lines of early cancer can likewise literally save thousands of lives each year.

The next problem which follows effective education of women along the lines of breast cancer is one which is distinctly up to the medical profession itself. We must be trained in cancer diagnosis to that level where the problems brought to us by the educated and enlightened laity are squarely and efficiently met. As I understand it we are here today to discuss exactly this problem, namely, how to establish an *early* diagnosis in breast cancer.

This will be accomplished not only by a study of the very earliest signs but by the utilization of any other aids which will help to determine this diagnosis. Effective training of the medical profession to recognize the earliest signs of cancer, together with education of the women to bring their breast lumps early to the physician, should increase our average of 40.6 per cent five year cures far above this figure up to 75 per cent or 80 per cent, as patients will then come before axillary metastasis takes place.

The most common breast lump appearing after fifty years of age is cancer; the commonest lumps under forty years of age are fibroadenomas, cysts and areas of chronic mastitis,—all benign lesions. After the age of thirty-five years, all women should have a periodic check-up by a competent physician.

Every physician should be familiar with the natural history of breast cancer and with the signs which accompany the malady during its various stages of development and progress. To study the cancer signs best, it might be well to divide arbitrarily the life history of the cancer into four periods and attempt to place the signs in their corresponding periods. We wish to emphasize that the signs enumerated below are placed in each period somewhat arbitrarily; although they more commonly occur during the period in which we have grouped them, still this is not invariably true. There are wide variations as to the time when these signs make their appearance. Rarely does one find in the same patient all the signs which we have assigned to the special period.

Our discussion will be confined to the signs of Groups I and II. Groups III and IV represent the disease during a phase in the life history when the diagnosis should be simple for even those who are innocent of experience in this field of medicine.

GROUP I—THE INITIAL STAGE

Frequently patients present themselves to us complaining *only* of the presence of a lump. In three out of every four cases, (76 per cent of breast carcinoma) the factor which brings her to the physician is this *lump*—not pain (6 per

*Read before the Massachusetts Cancer Clinics in Worcester, Mass., December 7, 1932, under the Auspices of the Massachusetts State Department of Health.

†Adair—Attending Surgeon, Memorial Hospital, New York City. For record and address of author see "This Week's Issue," page 1269.

SIGNS, CONSIDERATIONS AND AIDS TO DIAGNOSIS

Group I Initial Stage	Group II Early Period (before it goes to axilla)	Group III Later Period	Group IV Advanced Stage
1. Presence of a nodule or lump.	1. Presence of a lump; slight attachment to overlying skin or "tugging" as one pushes the tumor laterally. This is a most important sign and one of the earliest. Sign precedes No. 2.	1. Presence of a lump.	1. Mass in the breast.
2. Lump or nodule is hard.	2. May be retraction or dimpling of the overlying skin.	2. Lump is hard.	2. Breast is heavy (weight).
3. Age consideration. Always consider cancer possibility from 35 years upward.	3. May be slight elevation of the breast.	3. Lump is painless.	3. Ulceration of the tumor.
4. Lump is solitary.	4. May be slight irregularity of the breast contour.	4. May be local bulging of the tumor with tense congested overlying skin.	4. Skin nodules over and about the breast.
5. Lump is painless in ¾ of all cases.	5. May be "sticking", beginning fixation or definite retraction of the nipple.	5. Mass may invade large portion of breast (as duct cancer) or be locally bulky; or ulcerate as adenocarcinoma; or retract breast upward against chest wall as in scirrhous carcinoma.	5. Nipple retraction.
6. Delicate skin attachment.	6. Lump solitary.	6. Breast deformity	6. Peau d'orange.
7. Irregularity of the tumor.	7. Dark bloody discharge is "duct carcinoma".	7. Peau d'orange.	7. Pain in shoulder and down arms from disease in brachial plexus and in axilla.
8. Transillumination; opaque if a blood or cancer cyst.	8. Usually painless lump (painful in only 7 per cent of the cases).	8. Axillary nodes present.	8. Supraclavicular and axillary nodes.
9. Aspiration or punch biopsy rarely of value as tumor is too small.	9. Transillumination; opaque if a blood or cancer cyst.	9. Nipple retraction.	9. Dyspnea from pulmonary metastasis.
10. Surgical extirpation to establish the pathology.	10. Nipple level may or may not be higher on affected side.	10. Punch or aspiration biopsy positive.	10. Pains in the pelvis radiating down the legs. Worse in knee. Metastasis to space near acetabulum.
11. Bloody discharge. Cancer in about half the cases.	11. Aspiration or punch biopsy positive.	11. Transillumination is opaque.	11. Pain in the spine or pain radiating around the body following the course of the nerves; crushing of body of vertebra.
	12. Consideration of age.		12. Enlarged arm (lymphedema).
	13. No axillary disease.		13. Enlarged liver with abdominal distress.
	14. X-ray of chest negative.		14. Possible pathologic fractures.
	15. Supraclavicular space free—no squaring off of angle of neck with the body.		15. X-rays of chest positive for pulmonary metastasis.
			16. Anemia.
			17. Loss of weight.
			18. Anorexia.
			19. Cachexia.

cent) or discharge at the nipple. The physician makes an examination, going over each cubic centimeter of mammary tissue slowly and carefully, not only with the patient sitting up, but with the patient in a reclining position. If a nullipara, he should have her bring the head forward in order to relax the skin over the upper chest and the breast. Examination is much facilitated thereby. One may find that there is no attachment to the skin, no nipple "sticking", no dimpling of the overlying skin; in fact, not one sign on which the diagnosis of cancer can be definitely based—only a lump is present. The small tumor is movable. Now, in such a case how can anyone make an exact diagnosis? To admit the truth, the diagnosis cannot be made even by experts. One can only be *suspicious* of cancer being present, and proceed by sane steps to establish the diagnosis.

One must first give consideration to the age of the patient, remembering that more and more frequently today we find cancer in the decades of thirty to forty years and twenty to thirty years. As the physician's experience is enriched, he will hesitate to promise a patient in the late twenties and the thirties that the tumor will prove to be benign. When a lump is 8 to 10 mm. or less in diameter it is impossible ordinarily to differentiate a fibroadenoma, a small cyst, and an early carcinoma. Even the cyst of this size is very firm because the fluid is under such tension and its walls are denser than later on. If the tumor lies quite near the surface it may be possible to settle the question of its being a cyst by a simple needle puncture. If the puncture obtains clear serous fluid one is dealing with a simple cyst, and the tumor will disappear permanently in 50 per cent of the cases by this aspiration. If the fluid be bloody the probability is that one is dealing with a cancerous cyst. Exploratory removal of the lump is then indicated to establish the diagnosis unless perchance one has been fortunate in obtaining material during aspiration which can be smeared on a slide and examined under the microscope. It should be here stated that one ought to rely on aspiration or punch biopsy *only* in case the microscopic examination is positive for cancer. A negative biopsy by the punch or aspiration method must not be relied on as indicating that cancer is not present. It is almost impossible to pierce successfully with a needle a very small nodule which may be lying on the posterior wall of the mammary gland or even if it is embedded deeply in the gland. Much will depend on the position and depth of the lump as to the possibility of making a successful aspiration or punch biopsy.

If a carcinoma be quite near the surface one of the very earliest and most important signs is that delicate attachment to the skin on pushing the lump to one side. I always feel that this is one of our most reliable signs, and it is also one of our earliest.

As was implied above, the question of the stony hardness typical of certain carcinomas is a difficult sign to elicit in a small tumor. Unless the hardness is striking, this quality of the tumor will not be of great value in the early diagnosis.

A study of cases having bloody discharge from the nipple reveals that malignancy is present in 47.2 per cent of those cases[2]. One must be sure, however, that one is dealing with a *true* bloody discharge rather than a discharge typical of chronic mastitis where the material from the nipple ducts is different. The latter may be brownish, greenish, or yellowish, and the microscopic examination reveals that it is not blood but desquamated lining cells, mucoid material, and cell detritus. If a tiny lump is found well out in the breast substance accompanied by a dark bloody discharge at the nipple it is almost always a "duct carcinoma". Serosanguineous discharge is indicative of (1) papilloma in one of the terminal ducts, (2) a papillarycyst adenoma, (3) a papillarycystadenocarcinoma, or (4) a "duct carcinoma". The first three groups are usually situated within or at the edge of the areola. In a study of 108 cases of bleeding nipple I found that the average age for the *benign* lesions, causing serosanguineous discharge, namely papillomas or papillarycystadenomas, was forty-two years. The average age, however, after the lesions become *malignant*, was fifty-four and one-half years. My belief is that these benign lesions causing bleeding from the nipple eventually invade the basement membrane and develop into true cancer. We, therefore, are doing important prophylactic surgery when we remove or destroy these duct papillomas or papillarycystadenomas as they, on an average, develop into true carcinoma about twelve and one-half years later. This problem of the bleeding nipple, its diagnosis and treatment are of the greatest importance.

At Ewing's suggestion a light was developed to transilluminate the breast, on the basis that perhaps a new test for cancer might be thereby developed. I started on this clinical problem but found that the heat of the lamps which were made for me was too great to be of practical aid. By accident, however, I established, on examining breasts with bleeding nipples, that the cyst which was filled with blood would show through as black or opaque on transillumination. Cutler found a *cold* light (the Cameron light) which was very applicable to such studies of the breast[3]. He studied several types of breast lesions with this light and found it of definite aid in diagnosis and in the localization of those tumors which contain blood. My feeling at present, however, is that the value of this transillumination test is overemphasized. Too frequently the inference is left that

one can make a diagnosis of cancer by transillumination. This cannot be done.

Cancer of the breast is a painless tumor. If one is dealing with a tumor which is tender, as a rule it is not cancer. Pain was present as the initial symptom in but six per cent of the 1000 cases studied by Lee.

The solitary nature of the lump is a distinct aid to diagnosis. It is extremely rare that one finds cancer in more than one area of the breast in an *early* case. It practically does not happen. If there are several thickened areas scattered through one or both breasts, the probability is that one is dealing with localized areas of mastitis. If one finds lumps present in both breasts, one must first consider lesions other than cancer.

A breast cancer is irregular in contour as a rule. However, the earlier the lesion, the more apt it is to be smooth and discrete. In its later development the tumor becomes larger and covered with irregular hard bossae.

Clinically the three most common and difficult lesions to be differentiated from cancer are the following:

1. Localized areas of chronic mastitis.
2. Fibroadenomas.
3. Cysts.

A localized area of chronic mastitis is very difficult to diagnose if it is solitary. Fortunately, the localized areas are more commonly not only multiple but present in both breasts. This point is of great help in diagnosis. Occasionally in the center of a localized mass of chronic mastitis, one not uncommonly finds on section an early cancer. Possibly the cancer is responsible for its surrounding mastitis or possibly the reverse is true.

The fibroadenoma is firm, usually freely movable in breast tissue and usually small. It does not give the skin attachment, the nipple retraction, and the ordinary signs of cancer. It is especially common from eighteen to thirty years of age. Many times such tumors are multiple. Frequently in a thin person one can see a fibroadenoma bulging against the skin.

A solitary cyst is especially difficult to diagnose if it is small because it is movable like a fibroadenoma. It is sharply defined and firm. Later after the cyst enlarges it is easy to diagnose as it becomes fluctuant. Frequently cysts are multiple. On section of the breast one occasionally finds hundreds of cysts of sizes varying from five centimeters in diameter to miniature cysts two millimeters in diameter. This condition is termed "cystic disease".

One present difficulty which clinicians have in arriving at a correct diagnosis of breast lesions is that they too quickly conclude that the lesion is cancer if one or more of the diagnostic points are present, such as nipple retraction, skin attachment, peau d'orange, hardness, irregularity, etc. They do not give sufficient consideration to the fact that certain *benign* lesions also give, on occasions, signs generally considered to be characteristic of mammary cancer. Since women are now coming to us for examination much earlier than previously, the difficulties of diagnosis have greatly increased. It is therefore most important for us to give added consideration to each one of the diagnostic points and to elicit the most exact history possible.

It may be helpful at this point to give a list of those benign lesions which at times simulate carcinoma and occasionally give one or more of the cancer signs such as skin attachment, nipple retraction, breast elevation, peau d'orange, or irregularity of the breast contour, etc. They are the following:

1. Traumatic Fat Necrosis[4].
2. Plasma Cell Mastitis[5].
3. Chronic Lactation Mastitis.
4. Subacute Inflammatory Mass.
5. Tuberculous Mastitis.
6. Gumma and Luetic Mastitis[6].
7. Deep abscess (occasionally).
8. Cyst (infrequently) — more commonly when within the areola.
9. Intracanalicular Fibroadenoma (rarely).
10. Traumatic Mastitis.
11. Benign Lesion such as Fibroadenoma or Papillarycystadenoma lying *within* the areola.

In this list of eleven benign lesions it is to be noted that seven are of various forms of mastitis. The diagnosis of chronic mastitis of the simple forms (hypertrophic, cystic, fibrous) is usually easy as this condition is more commonly *bilateral*, and the entire gland is involved. One is able to pick up the breast as a whole, the edge of which is sharply defined, and, as has often been said, is like the edge of a saucer.

For a more complete description of the details of some of the above breast lesions it may be well to refer to the original sources.

BIOPSY

Biopsy is a most important subject. There are many conflicting views on the part of the surgeon concerning the correct technique of performing a biopsy and there are equally divergent viewpoints concerning the proper preparation of the material after the biopsy has been performed — the latter problems being those raised by the pathologists. Certain pathologists insist that they can tell as much by examination of the gross material removed as they can by studying a frozen section of the same material under the microscope. Naturally, they prefer paraffin prepared microscopic sections; the latter, however, require a few days to prepare and

this makes the patient lose valuable time if an operation is to follow.

There are five methods of performing a biopsy on a breast tumor:

1. Aspiration[7].
2. Punch[8].
3. Section of the tumor edge.
4. A bold cut directly into the tumor.
5. Extirpation of the tumor in its entirety.

1. By the aspiration method, the tumor is pierced by an 18 gauge aspiration needle attached to a close-fitting syringe such as a record syringe. One aspirates a small "flake" of tissue which is transferred to a microscopic slide. A smear is then made by crushing this tissue between two such slides. The pathologist, if he has had some experience in this type of diagnosis, will be able to make a diagnosis as to whether the tissue is cancer. He will not, however, be able to grade the degree of malignancy.

It usually takes some experience on the part of the pathologist to be certain of his diagnosis. Many pathologists at first object to this newer method. It is, however, of very great value to the clinician as the procedure is simple, can be quickly performed, and the pathologist renders an opinion within five minutes; furthermore it is of real aid to the surgeon to know before making his incision whether the tumor is malignant. One may raise the question of the possibility of pushing a few cancer cells by this procedure into an open lymphatic space or blood vessel. The possibility is naturally one for serious consideration, but we believe the risk is comparatively small; and anyway the surgeon *must* know the nature of the tumor. It is a less traumatizing procedure than most forms of biopsy, as the instrument is small and hollow.

2. The punch biopsy was described by Hoffman. It consists of pushing a small-sized punch into the tumor; a sharp excision of a small bit of tissue is made by his instrument. This tissue is either smeared on a microscopic slide as described above, or the tissue can be mounted and a paraffin section made. The piece of tissue is slightly larger than that obtained by the aspiration biopsy. This method has both the advantages and the objections of the aspiration method. By an electric connection the tract is electrically cauterized, thereby minimizing the possibility of metastasis.

3. With the scalpel or the cutting electric needle a segment of the tumor edge can be removed and examination by frozen section made at the time. The same objection, namely the possibility of dissemination at the time, in reality applies to all five methods.

4. Some surgeons prefer to cut directly into the tumor substance (bisect the tumor) and either make a diagnosis from the gross appearance of the tumor or remove a portion for examination.

It seems to me that a greater danger of dissemination presents itself by this method, as more lymphatics are opened by the generous incision. Furthermore, on account of the continuous bleeding from the cut surface of the incised tumor, it is necessary for the surgeon to keep sponging away the blood from the open wound. The latter procedure in itself creates many opportunities for cancer transplants in the breast tissue immediately adjacent and also in the subcutaneous tissues. The mere act of *pressure* by the hand which holds the sponge may succeed in pushing loose cancer cells farther along in the lymphatics. After such an incision and biopsy, carbolic acid solution should be locally applied.

5. Extirpation of the tumor with a generous margin surrounding it in all directions is a perfectly reasonable way to ascertain the information which one desires from biopsy. If one exercises caution, handles the tissues gently, and removes the tumor from its bed before any attempt is made to examine its nature, it would appear as if this procedure were about as safe as any—and certainly theoretically safer than by the direct cutting into tumor substance.

When the tumor is quite small, aspiration and punch biopsy are both unsatisfactory because of the difficulty of penetrating tumor substance. Excision is therefore the best way of performing a biopsy on a small lump.

Every surgeon who sees many tumor cases should be especially trained in gross pathology. It will save him many anxious moments. Furthermore if he leans entirely on the knowledge of the pathologist, he will have uncomfortable times because in some institutions the pathologist is not always easily available at the operating table.

Before leaving the subject of biopsy it must be stated in all scientific fairness that there seems to be much of theory but little of scientific proof as to the dire results of the different methods of biopsy. Peck and White from their studies on biopsy reported no difference in the end-results, where delay was necessary for a few days in order to make a paraffin section, in contrast to those cases where radical amputation was done without biopsy. Their five year results were no worse where biopsy had been performed.

If one cuts directly into the tumor edge or into the tumor, one should consider the field as contaminated; and as a result, change gloves, instruments, drapings, etc.

I personally prefer the biopsy methods by aspiration, punch and total extirpation, and believe that they add less likelihood of dissemination than the other methods.

The most difficult case for diagnosis is one that has a solitary painless lump so small that the physician has difficulty in determining whether he is dealing with a localized thickening of the duct or actually dealing with a local neoplasm. The tumor is freely movable; not one sign of

cancer is present. In this instance one should not hesitate to advise a local removal of the tumor and determine its exact nature at the operating table. I always welcome a patient who comes with a tumor of the breast so small that exact clinical diagnosis is impossible without its local removal. We will nearly always cure that patient even if a carcinoma be present.

In closing I wish to touch on one phase of cancer work. We doctors in this field have a peculiarly grave responsibility resting on our shoulders—far more than in any other line of medical endeavor. If a bank elects to make a small loan, the proposition is put up to one of the vice-presidents. If a big loan is involved entailing great responsibility, a small but important committee that can easily be gotten together passes on such a proposition. This idea of commerce must be adopted by every cancer clinic. "Group opinion" is necessary both for diagnosis and for the outlining of the treatment program. Frequent consultations should characterize *each* clinic. Only by sympathetic coöperation, by confidence in our colleagues, by diligent study, by frequent staff meetings, by occasional outside stimulation, and by hard work will we be able to add to the growing reputation of our cancer clinics.

REFERENCES

1 Adair, Frank E.: The results of treatment of mammary carcinoma. Ann. Surg. 95: 410 (Mar.) 1932.
2 Adair, Frank E.: Sanguineous discharge from the nipple and its significance in relation to cancer of the breast. Ann. Surg. 91:197 (Feb.) 1930.
3 Cutler, Max: Transillumination of the breast. Ann. Surg. 93: 223 (Jan.) 1931.
4 Lee, Burton J., and Adair, Frank E.: Traumatic fat necrosis of the female breast and its differentiation from carcinoma. Ann. Surg. 72: 188 (Aug.) 1920.
5 Adair, Frank E.: Plasma cell mastitis—a lesion simulating mammary carcinoma. Arch. Surg. 26:735 (May) 1933.
6 Adair, Frank E.: Gumma of the breast; its differential diagnosis from carcinoma. Ann. Surg. 79: 44 (Jan.) 1924.
7 Martin, Hays E., and Ellis, Edward B.: Biopsy by needle puncture and aspiration. Ann. Surg. 92: 169 (Aug.) 1930.
8 Hoffman, William J.: New technique and instrument for obtaining biopsy specimens. Am. J. Cancer. 15: 212

AN EXTREME CASE OF PYELITIS OF PREGNANCY TREATED BY NEPHROSTOMY WITH RECOVERY AND SUBSEQUENT SUCCESSFUL DELIVERY*

BY LOUIS E. PHANEUF, M.D.,† AND ROGER C. GRAVES, M.D.†

PYELITIS is a common complication of pregnancy. Fortunately, in most instances, the infection may be controlled by a simple medical program, emphasizing rest, forced fluids and urinary antiseptics, but in the more severe cases it is sometimes necessary to resort to direct antiseptic lavage of the pelvis of the kidney, or even to constant renal drainage by means of an indwelling catheter within the ureter. The results obtained with these measures are usually highly satisfactory, and the relief to the patient may be almost immediate. Occasionally, however, where sepsis is extreme and where these commonly employed methods are of no avail, surgical drainage of the affected kidney by nephrostomy may avert disaster, as in the following case to which we wish to call attention.

Mrs. E. L. F., aged 25, who was five and one-half months pregnant, was admitted to the Carney Hospital on February 19, 1932, complaining of pain in the right groin, with chills and fever, of five days' duration. Shortly before there had been a milder attack with pain on the left side. Her family history was irrelevant. Her husband was living and well. She had had no miscarriages and no children. An appendectomy had been performed four years previously. Her menstrual periods had always been regular, of the twenty-eight-day type, lasting three to four days, without dysmenorrhea. The last regular period had occurred on September 17, 1931.

The physical examination revealed a well-developed and fairly well-nourished young white woman who presented the appearance of serious illness. Her temperature, on the evening of admission to the hospital, was 99.4; pulse 124; respirations 28. The following morning the temperature was 102; pulse 120; respirations 24 and blood-pressure 95/65. The fundus of the uterus was at the level of the umbilicus. There was slight tenderness but no spasm in the right lower quadrant. Extreme tenderness and some muscle resistance were found in the right lumbar region. The entire abdomen was markedly distended and the flanks were faintly edematous. A catheter specimen of urine contained very numerous pus cells in large clumps. The white blood count was 9800. On the day after entry the patient developed a generalized punctate rash, which a medical consultant believed to be the result of toxemia.

On February 23, four days after admission, and when an intensive medical program had failed to afford relief, a cystoscopic examination was carried out and the pelvis of the right kidney was irrigated with boric acid solution, followed by the introduction of 10 cc. of 2 per cent mercurochrome. The catheter was left in position in the right ureter for twenty-four hours. The white blood count at this time was 22,000. Blood-urea-nitrogen was 25.6 mg. per 100 cc. of blood. Blood Wassermann was negative. The urine obtained from the right kidney was thick and purulent and the sediment, microscopically, contained pus cells averaging in number thirty or forty to the high power field. *Report of culture: Colon bacillus.*

Three days later, February 26, the temperature was subnormal and the pulse 120. The patient seemed somewhat improved but the right kidney was still large and tender. The antiseptic lavage of the right renal pelvis was repeated and the ureteral catheter again left in situ. The right kidney urine appeared to be less cloudy but still contained abundant pus. X-ray films of the urinary field showed the catheter in position in the right ureter and also outlined the fetus in utero. Two days later the temperature and pulse rate had begun to subside, but abdominal distention persisted. There was a mass in the right lumbar region which seemed to be

*From the Gynecological and Obstetrical, and the Urological Departments of the Carney Hospital, South Boston, Massachusetts.

†Phaneuf—Professor of Gynecology, Tufts College Medical School. Graves—Urologist to the Carney Hospital. For records and addresses of authors see "This Week's Issue," page 1269.

increasing in size and the patient was definitely jaundiced. A right nephrostomy was decided upon.

The operation was performed on March 1 under nitrous-oxide-oxygen ether anesthesia. A trocar was introduced through the kidney substance into the renal pelvis, permitting the escape of thick pus. A large rubber drainage tube was introduced and held in position by sutures. A cigarette drain was placed beneath the lower pole of the kidney. There was an immediate, sharp febrile reaction to 103.8, with a pulse of 140, but the temperature then gradually fell to normal and the pulse rate remained between 90 and 100. The nephrostomy functioned well, but the drainage tube was removed when a sinus had been established. There was a free discharge of urine from the right kidney. On the fourth postoperative day the hemoglobin was 55 per cent, red blood count 3,850,000, white blood count 18,000. The bladder residual urine was estimated and found to be only two ounces. Four hundred cc. of citrated blood were given by transfusion on March 8. Two days later there was a purulent discharge from the right ear, which had first begun to give pain on the day of the operation. Mastoid tenderness followed and an x-ray film, taken on March 16, revealed clouding and loss of cell structure in the right mastoid region. As the patient was still very toxic and slightly jaundiced, a conservative program rather than surgical drainage of the mastoid was decided upon. On March 21 a small blood transfusion, (75 cc.) was given by the citrate method. On April 1 perirectal abscesses developed which were satisfactorily treated by poultices.

On April 16, after the patient had had a normal temperature for about three weeks, her membranes ruptured and she started in labor shortly afterwards. She was given grains vi sodium amytal and later a small amount of gas with her pains. The head came down on the perineum but she did not have sufficient strength to deliver herself. One-half cc. of pituitrin was administered without effect; therefore, solid-blade forceps were applied and a premature female child, weighing three pounds and nine ounces, was easily delivered. The mother and child were in good condition at the end of the delivery. The nephrostomy wound closed at once. The next day there was very little drainage from the sinus and the patient was voiding in large amounts. She continued to improve and the puerperium was uneventful.

On April 19 there was no drainage from the nephrostomy wound and it was closing in well. The patient was discharged on May 2 at which time there was no discharge from the right ear and the perirectal abscesses were healing well. The wound in the right lumbar region was completely healed.

On June 11 the abdominal examination showed a well-healed right rectus scar and a recently healed right lumbar incision. There was no abdominal tenderness. The vaginal examination showed the perineum to be intact; there was no relaxation of the vaginal walls; the cervix was healed; the uterus was well involuted, in forward position, and the adnexa were normal. The rectal examination showed a small fistula in ano. The right ear was still draining. The baby weighed four pounds and twelve ounces at this time; she was still in the Children's Hospital and doing well.

On June 13 the patient had a mastoid operation performed and two days later it was stated that her condition was satisfactory.

On August 12 the mastoid incision was healed. The pelvic examination gave the same results as the previous one. There was a small fistula in ano which was to be operated upon in the near future. The baby was well and weighed eight pounds and twelve ounces—(fourteen pounds in September).

The patient was advised to report for a complete urological examination as soon as her strength permitted.

SUMMARY AND COMMENT

A case of severe pyelitis complicating pregnancy is reported. All of the usual medical and cystoscopic measures having failed to give relief, a right nephrostomy was resorted to with highly satisfactory results. Two other complications developed in the form of otitis media with mastoiditis, and perirectal abscess. The patient was in such weakened condition that they were treated conservatively. Two small blood transfusions were administered. Labor occurred without serious complications, at a time when the patient's general health had improved. The child was sent to the Children's Hospital where it gained normally. *The nephrostomy sinus closed immediately following delivery.* The mother, subsequent to her discharge from the hospital, had a mastoid operation performed and made a good recovery.

We wish to call attention to the possibility of nephrostomy as a life-saving measure in the extreme cases of pyelitis complicating pregnancy, when the more conservative measures have failed.

NOTE: Since this paper was written, one of us (Graves) has encountered a case which was urologically almost identical with the one above described. It is reported through the courtesy of Dr. Walter Sargent. The patient was a young woman in the fifth month of her first pregnancy. Her previous health had been good. She was suffering from a severe renal infection with profound general toxemia. Cystoscopic investigation revealed signs of a bilateral pyelitis with a marked degree of retention of cloudy urine on the right side. Report of culture: Staphylococcus and colon bacillus. Antiseptic lavage of the renal pelvis with an instillation of two per cent mercurochrome was carried out on two occasions without sufficient improvement to warrant further dependence upon this program. In this case the ureteral catheter was not left in situ for constant drainage as, in the presence of so active an infection, it was considered unsafe. The patient was in a serious condition. She was toxic, emaciated and unable to retain either fluids or nourishment. In an effort to save both mother and child a right nephrostomy was decided upon.

The operation was performed very satisfactorily entirely under local anesthesia (two per cent novocain). Purulent material was obtained from the right renal pelvis. There was noticeably no untoward reaction to operation and improvement began promptly. The patient began to retain food and fluids and she gained in strength to the point where it was possible to allow her to return to her house with the nephrostomy tube functioning well. She remained comfortable and up and about until she reëntered the Quincy Hospital in labor within three weeks of term. A low forceps delivery was performed by Dr. Sargent. The nephrostomy sinus closed almost immediately. Both mother and child left the hospital in good condition.

It is our impression that the value of nephrostomy under these circumstances in pregnancy has been lost sight of. We wish to emphasize, as shown in these two cases, that the method conserves life, that the operation is neither difficult nor hazardous, that the nephrostomy sinus closes promptly and finally, that there is notably less damage to the affected kidney than would result from a continuance of the infection.

VERMONT STATE MEDICAL SOCIETY

THE DIAGNOSIS OF MILD SMALLPOX AND SCARLET FEVER*

BY CHARLES ARMSTRONG, M.D.†

IN Jenner's time smallpox was essentially a disease of childhood, which it was the lot of all to endure. There was but little attempt at segregation of the affected, consequently a correct diagnosis was not of great importance. Today, however, smallpox is in most localities a relatively rare disease, therefore its correct and early diagnosis bears an increased public health significance. The diagnosis of smallpox has been rendered increasingly difficult in many localities because physicians have had but little experience with the ailment, and also because an extremely mild strain of the disease with a mortality of less than one per cent has made its appearance in the United States during recent years.

This mild strain of smallpox has been variously designated as Alastrim, Kaffir pox, Amaas, etc., but it will be referred to in this discussion as variola minor in contradistinction to variola major or classical smallpox.

It is the diagnosis of this mild prevailing type of smallpox, not usually treated in textbooks, which I have been asked to discuss with you today.

DIAGNOSIS

Case History: An accurate history is an aid in arriving at the diagnosis in almost any condition and in this regard *variola minor* is no exception. The date of appearance and character of the earliest symptoms should be accurately determined as should the character and date of appearance of any rash.

The incubation period measured from the effective exposure to onset of the first or so-called prodromal symptoms is usually 10 to 12 days, or, as the prodromal symptoms in variola minor are occasionally absent, it is usually more satisfactory to count the incubation period as the 14 to 16 days preceding the appearance of the focal rash. The incubation period tends to be longer with variola minor than with severer strains. It is of interest, therefore, to consider the whereabouts and opportunities for exposure experienced by the patient not on the day of appearance of the rash but two weeks previously (plus or minus a few days).

Variola minor is most often confused with chicken pox, consequently the existence in the patient of illness previously diagnosed as chicken pox is of some interest. Likewise, the smallpox and vaccination history of the patient should be ascertained and the presence or absence of typical scars determined.

The presence of typical vaccination or smallpox scars so recent as to be still pink or pigmented is strongly against the diagnosis of *variola minor* which tends to be more readily prevented by previous immunization than is severe smallpox. On the other hand, caution must be employed in attributing protective action to old scars since the persistence of protection conferred by immunization varies greatly in individual cases.

Prodromal symptoms: Prodromal symptoms are usually and some say invariably present in *variola minor* and may be quite severe. However, cases occur during definite outbreaks, wherein the prodromal symptoms are so slight as to be elicited only after specific questioning and others in which their presence is denied. In the latter case the rash is the first symptom noted by the patient. When prodromal symptoms are present, they come on suddenly usually 10 to 12 days following exposure and consist of a feeling of illness, fever, nausea, vomiting, headache and backache. In this stage the disease is most often confused with influenza, meningitis or biliousness. The so-called toxic rash which occurs early in a portion of cases of severe smallpox and which may suggest measles or scarlet fever is rare in *variola minor* and therefore of little diagnostic value.

The prodromal symptoms usually lessen and disappear with the appearance of the focal rash and the patient feels easy and if left to his own inclinations will usually undertake his usual duties.

In chicken pox the onset of the rash is abrupt and nearly always without prodromal symptoms; but, in adults, mild symptoms may be present for a day or two.

The Focal Rash: The rash in smallpox usually appears about two weeks following exposure and in variola minor may consist of only eight or ten scattered lesions, while in other cases of the same epidemic they may be so numerous as to border upon confluence.

The focal lesions in classical smallpox appear first as macules which in the course of 24 hours become papular and resemble insect bites. By the end of another 24-48 hours, the papules will be found to contain a clear fluid or to have become vesicles. The vesicles, in unmodified cases, will continue to enlarge for several days and as they reach full size the lesions gradually change to pustules containing a creamy pus. After a few days the pustules may begin to exude or

*Read at the Annual Meeting of the Vermont State Medical Society, Burlington, Vermont, October 6, 1932.

†Armstrong—Surgeon, U. S. Public Health Service. For record and address of author see "This Week's Issue," page 1269.

may dry down to scabs without discharging their contents. In variola minor the lesions as a rule conform to the classical development but are apt to pass through the successive stages more rapidly (papules, vesicles, pustules, crusts). On the other hand, all or part of the lesions may fail to follow the classical development and proceed from most any stage to regress and dry up. The lesions of variola major may also show this abortive tendency in partially immune individuals. The lesions of smallpox on any given part of the body do not necessarily all appear at the same time (i.e., in one crop) and may vary considerably in size, but in any given area they do tend to reach their full development and proceed to drying at about the same time, usually somewhat earlier on the face than on the body and on the body earlier than on the feet. In chicken pox, lesions in various stages of development as crusts, vesicles and pustules usually exist side by side (the so-called crops of lesions).

In severe smallpox the change of the vesicles to pustules is accompanied by an increase of temperature and a return of unpleasant symptoms. In variola minor these septic symptoms may be quite marked, very slight, or indeed absent, depending usually upon the number of skin lesions present.

The differences between the individual lesions of classical smallpox and those of chicken pox with which they are most often confused is largely dependent upon the fact that in variola the lesions tend to be more deeply situated in the skin than is the case in chicken pox. Smallpox lesions being relatively more deeply situated appear therefore to raise the epidermis from beneath, while the usually more superficially located chicken pox lesions appear more like bubbles sitting upon the epidermis. The thicker covering of smallpox vesicles also gives them their peculiar pearly or clouded appearance and accounts for the fact that they are less easily broken than are those of chicken pox. Furthermore, the intercellular edema and cell degeneration and destruction are often irregular in distribution in the lesion and as there is no ready plane of cleavage in the deeper portions of the skin the vesicles form under considerable pressure, have a shotty feel, and are often multiloculated. It is the septa between these lobules which remain attached to the dome that lead to the umbilication stressed by so many in the diagnosis of variola.

As smallpox vesicles develop under considerable pressure, their bases, in accordance with geometrical laws, tend to be circular in outline. As the vesicles reach the pustular stage the trabeculae tend to autolyze and disappear. After a few days the pustules proceed to scab formation. After varying intervals the scabs begin to fall off and leave pigmented scars.

In chicken pox the lesions tend to be more superficial and have a thin covering and as they develop between layers of natural skin cleavage they are under only slight tension, vary considerably in size, and any multiloculation is usually transitory due to prompt autolysis of the slight septa. The fact that cleavage in the superficial skin tends to develop most readily in the direction of the skin folds causes the bases of the vesicles and likewise any resulting scars in chicken pox, especially when near flexures, to be oval rather than circular in outline.

The area of redness, or the areola, about the base of chicken pox lesions may be quite irregular in outline also, while in smallpox the reddened area is usually circular and regular.

While the characteristics of the rash as above noted should be looked for in suspected cases of smallpox it is to be remembered that they are by no means so well marked in *variola minor* as in *variola major*. For instance, in mild smallpox the vesicles tend to be more superficial and so may not show umbilication, except when by chance a vesicle has developed about the shaft of a hair. The lesions in variola minor may be so superficial moreover that they do not occasion permanent scars.

This development of the lesions as just described offers one of the surest criteria of smallpox diagnosis but has the disadvantage of requiring several days of observation.

Location of the Rash: As Ricketts pointed out in 1908, the distribution of the lesions in smallpox is the most important single diagnostic feature of the ailment and fortunately will often permit one to make a diagnosis at any time following the appearance of the focal rash without the necessity of awaiting or of observing its complete development. Moreover, the typical distribution does not seem to be affected by the strain of virus or by the state of resistance of the patient, factors which may considerably alter the character of the eruption at certain stages.

Effect of Irritation: The key to the characteristic distribution of smallpox lesions is to be found in the fact, as has long been noted, that local irritation when applied during the prodromal symptoms or shortly before the onset of the rash as by a hot water bottle, mustard plaster, sunburn, scratch, bruise or friction may occasion a heavy occurrence of the rash in the irritated region.

Bearing this point in mind we might expect smallpox lesions to bear the same distribution upon the body as does the opportunity for friction or irritation and this is apparently the case. For instance, the head and face are especially exposed to the friction and the irritation of sun and wind and are prone to develop smallpox lesions. Likewise, the distal portions of the limbs being more mobile than the proximal

portions or than the trunk itself are therefore more subject to friction and likewise more susceptible to smallpox lesions. Again, as the patient lies in bed, the back is subject to more irritation than the front, and the chest to more than the abdomen, all of which corresponds directly with the usual distribution of smallpox.

Likewise, in any given region the lesions tend to occur upon the ridges rather than in the hollows. As Ricketts speaking of the distribution of smallpox lesions pointed out "a dirty foot is a good teacher" for the clean parts subject to friction tend to show more and the dirty protected portions comparatively fewer smallpox lesions. Again, in smallpox the sockets of the eyes, the axillae, popliteal spaces and the groins are usually quite free of lesions.

In chicken pox on the other hand, the lesions tend to be more uniformly distributed and do not show the same dependence upon habitual friction; for instance, in chicken pox the lesions are usually more numerous upon the body than upon the head or extremities and the distal portions of the limbs are usually less affected than the proximal portions. The lesions also tend to occur in the axillae and protected spots largely avoided in smallpox.

Lesions upon the palms and soles have been considered as diagnostic of smallpox by some, but it is to be remembered that chicken pox lesions may also occur in these regions. It is also to be remembered that both smallpox and chicken pox lesions may occur upon the mucous membranes and confusion with the Koplik spots of measles may arise, however a consideration of the location of the lesions in the mouth is usually sufficient to differentiate these conditions and measles.

Other conditions occasionally confused with smallpox are syphilis, acne, herpes, urticaria, impetigo contagiosa, scabies, glanders, drug eruptions and insect bites. If a careful study of the character of the lesions and of their distribution fails to render the diagnosis definite, observation of the rash for a day or so will usually clear up the difficulty.

Laboratory Diagnostic Procedures: The white blood count is not sufficiently characteristic in smallpox to offer much aid in diagnosis. Several special procedures are, however, available, among which may be mentioned the following:

1. The Tièche test: In this test material collected from the suspected lesions is macerated in a little saline and then heated to 80° for 15 minutes (or may even be boiled). This heated material is then used as a vaccine upon the skin of a well vaccinated individual, usually the diagnostician himself. If the case is smallpox a reaction of immunity should result. The heating of the suspected material is essential to prevent the possibility of carrying syphilis or other infections and does not interfere with the smallpox immunity reaction.

2. The Paul test: In this test material from suspected lesions is placed upon the scarified cornea of a guinea pig. If the suspected lesions are of smallpox, corneal ulcers may develop within 48 to 72 hours. The detection of the ulcers is rendered easy by enucleating the eyeball and fixing it in concentrated sublimate and alcohol. The lesions may further be studied microscopically for the presence of Guarnieri bodies.

The Paul test is very definite when positive but the test fails in a variable percentage of smallpox cases and is more apt to fail in variola minor than in severe smallpox, consequently a negative Paul test has but little diagnostic value.

3. Complement Fixation and Flocculation tests: Complement fixation and flocculation tests may also be used, employing a suspension from suspected lesions as antigen against an anti-sera prepared from vaccine-immune rabbits. Or, in cases seen during later stages of the disease, serum from the patient may be tested for its complement binding or flocculating power against suspensions of vaccine virus. The flocculation test of Gordon has come into some vogue recently and gives promise of being a valuable laboratory diagnostic aid when carried out by experienced workers.

These various procedures, with the exception of the Tièche test, are, however, rather too complicated and time-consuming to be employed by the practitioner.

DIAGNOSIS OF SCARLET FEVER

It has also been requested that consideration be briefly given to the diagnosis of scarlet fever. Here as in smallpox, we are confronted with great variations in severity, and in the United States during recent years the tendency has been toward a preponderance of the milder type of the disease.

In scarlet fever of moderate severity an early diagnosis is usually rendered easy by the occurrence of such features as a coated tongue which soon becomes reddened at the tip where prominent papillae appear; swelling and redness of the tonsils with congestion of the soft palate and fauces; fever; vomiting; headache; rapid pulse; enlarged and tender cervical glands; and a diffuse erythematous rash on the chest, axillae and groins or perhaps of wider distribution coming on from one to three days from the onset. The tongue proceeds to desquamate and passes through the stages of the well-known "strawberry" and "raspberry" tongue. The white blood count is usually elevated.

When the case is not seen until late in the

disease as often happens, reliance in diagnosis will have to depend upon a careful history and the presence of certain late manifestations, such as the "raspberry" tongue, or the existence of desquamation about the forehead, ears, cheeks, and pubic regions or upon the hands and feet, especially about the nails. There are also certain rather frequently occurring complications of scarlet fever, the presence of which will aid considerably in reaching a probable diagnosis such as extension of the streptococci from the primary focus especially into the middle ear or cervical glands. The latter may remain enlarged for many days and may rarely suppurate. The presence or absence of albuminuria or nephritis should be investigated. Arthritis and rheumatism may also result from scarlet fever.

Pastia's sign and the Rumpel-Leede test are not specific for scarlet fever and offer practically no aid in the diagnosis of mild scarlet fever for the reason that they are usually absent.

While these well-known symptoms and sequelae of scarlet fever should be sought in suspected cases, it is to be remembered that in mild cases many of the usual features may be very meager or entirely absent. For instance, there may be but slight sore throat and little or no enlargement of the tonsils, no vomiting, and fever of only a degree or two which may disappear in from one to three days. The tongue changes may not progress beyond a mild coat with some enlargement of the papillae at the tip or along the edges. The patient may not feel ill at all and may be puzzled at the appearance of the rash which is frequently poorly developed and confined to the axillae and groins. It may fade in a few hours but usually tends to outlast the slight fever.

In some cases the rash may even be absent—such cases while clinically, perhaps, not scarlet fever may epidemiologically be that disease and give rise to typical cases. In mild cases desquamation is also usually slight and complications relatively infrequent.

Among conditions occasionally confused with scarlet fever are tonsillitis, diphtheria, measles, German measles, food rashes, serum rash and the early toxic rashes of smallpox. These conditions may be differentiated by giving consideration to the history of exposure and by a careful examination in which a search is made for the diagnostic features of the various ailments. Appropriate laboratory procedures may also be of aid in certain of these conditions.

In very mild cases the diagnosis is so difficult that it will usually remain questionable unless secondary cases arise or some characteristic features or complications develop in the later stages of the disease or some experimental evidence be secured.

Among experimental procedures may be mentioned the isolation of hemolytic streptococci from the throat. In suspected scarlet fever cases their finding has much the same significance, though somewhat less definite, as the finding of diphtheria organisms in suspected diphtheria.

In cases seen with an early rash the blanching or Schultz-Charlton test may be employed. When local blanching results from the intracutaneous injection of scarlet fever anti-serum into the area of rash it is positive evidence of scarlet fever. Failure to blanch in scarlet fever may however result when the rash is old or when the anti-serum employed is weak in neutralizing power. A positive blanching test may also be masked when the patient tested happens to be sensitive to the serum employed.

A Dick test performed during convalescence from scarlet fever should be negative, but such a negative test is diagnostic of scarlet fever only when the test is known to have been positive prior to the attack. On the other hand, a Dick positive test performed after the disappearance of the rash in a suspected case would be evidence against scarlet fever provided a pseudo-reaction can be eliminated.

REFERENCES

1 Dick, G. F., and Dick, G. H.: A skin test for susceptibility to scarlet fever. J. A. M. A. 82: 265 (Jan. 26) 1924.
2 Dick, G. F., and Dick, G. H.: Results with the skin test for susceptibility to scarlet fever. J. A. M. A. 84: 1477 (May 16) 1925.
3 Gordon, M. H.: Studies of the viruses of vaccinia and variola. Special Report, No. 98. Medical Research Council, London.
4 Paul, G.: Zur Differentialdiagnose der Variola und der Varicellen. Centralb. f. Bakteriol. 75: 518, 1915.
5 Ricketts, T. F.: The Diagnosis of Smallpox. London, Cassell and Company, Ltd. 1908.
6 Schultz, W., and Charlton, W.: Serologische Beobachtungen am Scharlachexanthem. Ztschr. f. Kinderh. 17: 328, 1918.
7 Tièche, M.: Epidemiologisches und Experimentelles über Variola und Vakzine. Cor.-Bl. f. schweiz. Aerzte. 43: 737, 1913.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

APRIL, 1933

The incidence of communicable diseases reported during the month of April is as follows: chicken pox 95, diphtheria 2, measles 141, mumps 202, scarlet fever 47, whooping cough 79 and tuberculosis 10.

The Laboratory of Hygiene reports a total of 1,279 examinations made in April, classified in the following manner:

Examinations for	diphtheria bacilli	94
"	" Widal Reaction of Typhoid Fever	28
"	" Undulant Fever	17
"	" gonococci in pus	108
"	" tubercle bacilli	117
"	" evidence of syphilis	386
"	of water, chemical and bacteriological	56

"	" water, bacteriological	230
"	" milk, market	95
"	" milk, submitted for chemical only	4
"	" milk, submitted for microscopical only	55
"	" foods	5
"	" drugs	0
"	for the courts, autopsies	2
"	" the courts, miscellaneous	29
"	miscellaneous	51
Autopsies to complete death returns		2

There were fifteen new cases of gonorrhea and fourteen new cases of syphilis reported to the Division of Communicable Diseases. Two hundred and sixty-seven Wassermann outfits and 127 gonorrheal slides were distributed by this Division.

The Director of the Division of Tuberculosis visited schools in six towns of the state, the director giving talks to high school pupils and his assistant on these trips presenting a health entertainment for the grade children.

The nurses of the After-Care Poliomyelitis Division made 37 home visits during the month, visited two doctors, removed three plaster casts and ordered corrections made to shoes. The vocational worker of this Division made sales amounting to $90.10 for the month of April.

The Maternity and Infancy Division Nurse visited ten towns, giving demonstrations on the care of the sick in the home and first aid, and organizing meetings for the Addison County Health Committee. During the month, 366 notifications of birth registration have been issued and 526 pieces of literature have been sent out.

FOOD AND DRUG CONCERNS FINED IN FEDERAL COURTS

The Federal Food and Drug Administration caused the seizure in May of 140 consignments of foods and drugs found to violate the national pure food and drug law, reports W. G. Campbell, Chief. The Administration also sent to the Solicitor of the Department of Agriculture recommendations for prosecution of cases involving 40 stocks of foods, drugs, and insecticides. These included apples carrying traces of arsenic and lead, coffee containing undeclared cereal, and numerous other products. Notification was received from Federal courts of the termination of 19 criminal prosecutions of violators resulting in fines ranging from $5 to $600.

Federal seizures for May included a wide variety of foods and drugs—adulterated and misbranded livestock remedies; aspirin tablets; tincture of digitalis; proprietary remedies falsely and fraudulently labeled as having remedial value in the treatment of diseases including pyorrhea, goitre, rheumatism, acidosis, liver disorders, diabetes, hay fever, and deficiency disease; apple chops and fresh apples found to carry residues of poisonous chemical sprays; butter deficient in butterfat; sacked potatoes misbranded as to net weight of contents; oysters and various other commodities.

During the month, Federal officers seized 996 cases of unlabeled, decomposed canned oysters.

More than 6,000 pounds of frozen tullibees were destroyed because they were infested with worms.

Criminal prosecutions terminated in May, or for which the Administration received notice of termination resulted in the imposition of fines against the following manufacturers:

Eatmor Chocolate Company, Pittsburgh, Pa., $200 and costs, because skim milk had been substituted for whole milk in the product.

Joseph Fusco, trading as J. Fusco, San Francisco, Calif., $25, for shipping dried cherries infested with worms.

Des Moines Co-Operative Dairy Marketing Association Inc., Des Moines, Iowa, $50 for interstate shipments of butter that contained less than 80% butterfat.

Frigid Food Products, Inc., Omaha, Nebr., $100 for shipping adulterated and misbranded frozen eggs.

Washington Creamery Company, Seattle, Wash., $50. The company shipped adulterated and misbranded butter.

Swift and Company, Keokuk, Iowa, $200. The company shipped to Detroit frozen eggs which were adulterated and misbranded.

Farmers Coöperative Creamery Company, Marion, Mich., $50. This company shipped butter, deficient in butterfat and therefore adulterated.

W. E. Roche Fruit Co., Yakima, Wash., $25 for shipment of apples which carried residues of arsenic.

Yakima Fruit & Cold Storage Co., Yakima, Wash., $75, for shipment of apples with residues of arsenic and lead.

Lutz & Schramm Company, Pittsburgh, Pa., $100 and costs because of adulterated jellies.

Twin City Creamery Company, Kennewick, Wash., $600 fine for shipping butter that contained less than the required 80% of butterfat.

HISTORICAL OPERATION PRODUCED IN MOTION PICTURE

One of the outstanding events of interest in connection with the exhibit of the Mallinckrodt Chemical Works of St. Louis, to be shown at the Chicago Century of Progress Exposition, will be a motion picture presentation of that noted operation performed by Dr. Morton and Dr. Warren, of the Harvard Medical School in 1846. This epoch-making event has been reënacted especially for motion picture presentation on this occasion.

This film, which has been exhibited at the Massachusetts General Hospital in the same room in which the operation took place, reënacts with historical fidelity the costumes and characters of the period. The actors are members of the staff and personnel of the Hospital; the picture was made in the very building and room in which occurred the first public demonstration of surgical anesthesia by means of ether inhalation.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

TWO CASES OF MALIGNANT BONE TUMOR

SURGICAL DEPARTMENT

CASE 19241

PRESENTATION OF CASE

DR. CHANNING C. SIMMONS: *First admission.* Dr. Mallory has asked me to give the history of a thirteen year old boy who was admitted to the hospital five years before his last entry with a tumor of fourteen months' duration on the inner aspect of the upper portion of the tibia. The tumor had grown slowly until it had reached the size of an egg. There was no history of trauma. X-rays of the rest of the body and bones were negative. The tumor was removed by Dr. Allen, and proved to be an osteochondroma, presumably non-malignant.

Second admission. Six months later the tumor recurred. I operated, taking out the recurrence, which extended into the popliteal space. A very large amount of bone was removed, so that there was practically no tibia left except a small piece of the cortex on the outer side.

Third admission. One year and four months later a second recurrence was removed.

Fourth admission. A fourth operation for recurrence was performed two years and five months later by Dr. Daland and another recurrence removed.

Fifth admission. On February 7 of the following year the patient reported to the Tumor Clinic with a recurrence half a centimeter in diameter which increased by March 12 to the size of an egg. The x-ray films show the tumor very poorly because it is cartilaginous and does not show by x-ray.

These tumors are of slow growth and low malignancy, but eventually will metastasize. As in this case, it is often impossible to remove them and amputation is necessary. They are not radiosensitive.

CLINICAL DISCUSSION

DR. ARTHUR W. ALLEN: I remember when we operated on this case. The first operation was in the nature of an exploration to make a diagnosis of the character of the tumor. It was considered to be either very slowly growing, of mild malignancy or benign, and it was felt that certainly one palliative procedure was justifiable. We had, I think, a frozen section made at the time of the exploration.

I should like to ask Dr. Simmons whether or not this type of tumor changes into a more malignant type by repeated operations and whether or not these tumors should be treated more radically in the beginning in order to prevent change to a more malignant type.

DR. SIMMONS: I think they should. A certain number of the cases do recover if one gets all the tumor out. The difficulty is that the islands of cartilage are microscopic. I might cite a case Dr. Hartwell spoke of, a patient from whom in 1914 I removed a chondroma from a metatarsal bone, taking out half the metatarsal. It was reported as non-malignant. Fourteen years later the patient reported with osteogenic chondrosarcoma in that situation and died. He went fourteen years without a recurrence. The tumors were identical microscopically and the diagnosis of that removed in 1914 was changed to sarcoma of low malignancy. If I had removed the entire metatarsal I should probably have cured that man in the first place.

I think this boy has a good chance of cure.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: I think the gross specimen is very interesting. There is a well localized tumor rising from the surface, beneath which is a good layer of cortical bone. In spite of the extent of one of Dr. Simmons' operations, when he took out nearly three-fourths of the shaft of the femur, there has been a complete regeneration. In so far as we can make out in the gross, the tumor does not seem to penetrate very deeply. The marrow underneath is perfectly free, as it would hardly be with a typical osteogenic sarcoma.

The sections show very well differentiated cartilage. Here is fibrous tissue overlying the tumor and here is the tumor itself. The dark blue areas are typical cartilaginous matrix and have large lacunae and stellate cells within them. The actual cells are perhaps a little larger than perfectly normal cells. Here and there between the areas of well formed cartilage one finds less differentiated areas which are pretty cellular, and in those areas mitotic figures are not at all rare. From this specimen, I think, one would have to make a diagnosis of sarcoma.

DR. SIMMONS: How does it compare with the previous sections?

DR. MALLORY: This is distinctly more rapidly growing. The degree of differentiation is still good.

Geschickter and Copeland* have recently recorded a very large series of tumors of that type in their book on bone tumors, and they make the statement that the histology of one of these

*Charles F. Geschickter and Murray M. Copeland. Tumors of Bone. New York, 1931.

cartilaginous tumors is very much less important than its location. On the whole we would agree that ordinarily chondromas of the fingers and toes are not malignant, the case Dr. Simmons mentioned being somewhat of an exception. They too may recur, but ordinarily a local operation, sometimes a simple curettement, is sufficient to cure them. On the other hand, with histologically identical tumors occurring in the long bones a very high percentage of recurrence is the rule, as in this case. No matter how thoroughly you perform the operation or how sure you feel that you have got out all the tumor, there is nevertheless an excellent chance of recurrence. How do you feel about that, Dr. Simmons?

DR. SIMMONS: I think that is probably true. I think that in a boy of thirteen with a tumor probably of low malignancy one always hesitates to sacrifice the leg at once. There is no reason to do so at the first operation. I think the first man to call attention to this group of chondrosarcomas was Phemister. Many of these cases are of long duration. Geschickter and Copeland found that the cases treated radically early were cured. The late ones all died of metastases.

DR. MALLORY: Many of these tumors arise at the same sites at which benign exostoses frequently occur. That could be said of this one, could it not?

DR. SIMMONS: I think so.

DIAGNOSIS

Osteogenic sarcoma (chondrosarcoma) of the tibia.

CASE 19242

PRESENTATION OF CASE

DR. CHANNING C. SIMMONS: This is the case of a boy of fifteen who developed painless swelling in the upper end of the left radius without trauma. This swelling remained the same size for about nine months. Later he fell on the arm, sustaining a fracture. It seems that he cut his wrist also.

He entered the hospital three years after the time of onset, six months after the fracture. Physical examination showed a thin, pale boy, well developed. X-ray showed a definite pathologic process involving the head and upper portion of the shaft of the right radius. The other bones were normal. The lungs were normal. The tumor itself was a proliferative tumor without the ray formation usually seen in osteogenic sarcoma. There was a little lipping up of the periosteum at the lower end where it joined the shaft, but none of the onion skin appearance seen in Ewing's tumor and no new bone formation.

A biopsy was done. There was a little soft mushy tissue at the upper end of the normal shaft. The wound was closed on the supposition that it was inflammatory. Later a smear of the tissues taken showed what obviously were tumor cells. Two days later an amputation through the humerus was done with a diagnosis of Ewing's tumor. I think if I had seen the slides of the biopsy at the time, I should have made a diagnosis of a malignant tumor. My judgment might have been influenced by the fact that he had a fracture through the tumor. We have had several cases of a somewhat similar character. In Ewing's tumors we get soft mushy tissue which looks very much like pus, and unless we know the possibility that it may be tumor and not true pus we are deceived.

Theoretically the prognosis in this case would be better if amputation had been done at the time of the biopsy. It is poor judgment to explore a malignant tumor unless one is prepared to perform an immediate radical operation. Reviewing the cases of bone sarcoma in the Registry, we find that many of the cases that get well are those that have the poorest form of treatment. These tumors are very radiosensitive and temporarily respond to treatment, but the disease eventually terminates fatally.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: This is the specimen in this case. A considerable portion of the shaft is involved. The tumor is present throughout the marrow cavity, has passed through the cortical layer of bone, more or less completely destroying it in places, is infiltrating underneath the periosteum, and has actually passed beyond the periosteum at one point.

The sections from it are here. This is a very characteristic appearance of Ewing's tumor. The red areas are bone, but it is old bone which is gradually being destroyed and becoming absorbed. Sometimes one gets new bone formation, essentially callus formation in response to the destruction of old bone, but you can generally prove without much difficulty that any new bone that is being formed in these cases is not being formed by tumor cells but by perfectly good osteoblasts having no connection with the tumor. These tumors are apt to have an alveolar arrangement. The cells are quite small and a little spindle shaped. They never seem to differentiate far in any direction. The histologic appearances would suggest an extremely rapidly growing very undifferentiated tumor, and yet we know from the story that this has been present for nearly two years.

DR. GEORGE W. HOLMES: I should like to ask how you explain that spicule formation. These tumors do not generally form bone themselves in a way a true osteogenic tumor does. In many of these cases there is typical spicule formation such as we get in true osteogenic tumors.

DR. MALLORY: I haven't any explanation for it, Dr. Holmes. It was very marked in some cases I remember.

DR. HOLMES: There seems to be considerable variation in the x-ray picture of Ewing's tumors. These tumors may closely resemble typical osteomyelitis or true osteogenic tumors. The diagnosis is perhaps as difficult as in any malignant tumor.

Dr. Simmons asked me to say something about radiation treatment. I think it should always be given either with high voltage x-ray or radium pack, never by insertion of seeds directly into the tumor. As in all bone tumors, radiation treatment is not so satisfactory as it is in the treatment of soft tissue tumors, because, in destroying a bone tumor, bone is destroyed too to some extent. These tumors are extremely radiosensitive. I believe that if the dose is properly given one should get complete destruction of the local tumor. That this is not the case is shown by the number of recurrences at the site of the original tumor. Probably we did not use sufficiently heavy doses. Of course the tumors metastasize early. We have no cured cases in this clinic by radiation treatment alone. I think there are one or two cases reported in the Registry. Theoretically this type of tumor should be successfully treated by radiation. Practically I think surgery is still the method of choice.

DR. MALLORY: We had a very interesting tumor of this sort nearly a year and a half ago in the Baker Memorial, apparently arising in a vertebra. In that case surgery was impossible because of the location. Dr. Hampton has been treating that case and apparently has had complete success.

DR. HOLMES: I remember the case very well. The tumor has disappeared and the man appears to be entirely well. The transverse process which was said to have been removed at operation has reappeared.

DR. MALLORY: Perhaps it regenerated. This first case regenerated much of the tibia.

DR. SIMMONS: I think there are two or three cases of cure following radiation reported in the literature. Evans of Detroit reported one as cured by x-ray treatment which by x-ray had evidence of lung metastasis. I do not know about the microscopic examination in that case. There was one case in this hospital, but in which the diagnosis is questioned, catalogued as a Ewing's tumor of the humerus, in which the patient lived seven years after shoulder joint amputation and had a recurrence in the soft parts. The patient has gone two years since the recurrence was removed. X-ray treatment was given after the second operation.

DR. MALLORY: There is one other well known point of which it is perhaps worth while to remind you again. With considerable regularity, though it is not at all invariable, these cases have fever which is sometimes high enough so that two of our cases, perhaps three, have been diagnosed preoperatively as osteomyelitis.

DR. SIMMONS: There is one case in the hospital records in which the symptoms began two weeks after a football injury. On admission the patient had a white cell count of 15,000 and a temperature of 102°. Dr. Shedden operated for osteomyelitis, but questioned the diagnosis at that time and removed a specimen. This proved to be a Ewing's tumor. That boy died six weeks later of generalized sarcoma.

Ewing's tumors run a rather slower course after amputation or after treatment than ordinary osteochondroma does. These patients also live rather longer after amputation or other treatment than patients with ordinary osteogenic sarcoma. The tumor has a definite predilection for metastasizing into the skull or orbit, and exophthalmos is often seen. They may have multiple metastases in the skull, in other bones and in the lungs. Ordinary osteogenic sarcoma does not metastasize to other bones as a rule, but there was a patient in the Tumor Clinic this morning who had a hip joint amputation eight months ago for osteogenic sarcoma of the femur who looks at present as if he had a recurrence in the third lumbar vertebra.

DIAGNOSIS

Ewing's tumor of the radius.

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

COMMITTEE ON PUBLICATIONS

R. I. LEE, M.D., *Chairman* HOMER GAGE, M.D.
R. B. OSGOOD, M.D. R. M. SMITH, M.D.
F. H. LAHEY, M.D.

EDITORIAL STAFF

REID HUNT, M.D. STEPHEN RUSHMORE, M.D.
JOHN P. SUTHERLAND, M.D. HANS ZINSSER, M.D.
GEORGE R. MINOT, M.D. BENJAMIN WHITE, PH.D.
FRANK H. LAHEY, M.D. HENRY R. VIETS, M.D.
SHIELDS WARREN, M.D. ROBERT N. NYE, M.D.
GEORGE L. TOBEY, JR., M.D. ROBERT M. GREEN, M.D.
C. GUY LANE, M.D. CHARLES C. LUND, M.D.
WILLIAM A. ROGERS, M.D.

WALTER P. BOWERS, M.D., *Managing Editor*

ASSOCIATE EDITORS

GEORGE G. SMITH, M.D. WILLIAM B. BREED, M.D.
JOSEPH GARLAND, M.D.

THE NEW HAMPSHIRE MEDICAL SOCIETY
PUBLICATION COMMITTEE

D. E. SULLIVAN, M.D. H. H. AMSDEN, M.D.
R. H. MARCOTTE, M.D.

THE VERMONT STATE MEDICAL SOCIETY
PUBLICATION COMMITTEE

WILLIAM G. RICKER, M.D. C. F. DALTON, M.D.
E. A. STANLEY, M.D.

SUBSCRIPTION TERMS: $6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $8.52 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 8 The Fenway.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 8 The Fenway, Boston, Mass.

THE ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY

THE one hundred and fifty-second anniversary meeting of the Massachusetts Medical Society was especially successful with respect to the educational and social features.

The clinics at the Peter Bent Brigham Hospital which were conducted during the forenoon of the first day drew a large attendance and were highly commended by those who were present.

The total registration for the three-day session was 1156, an increase of 68 over the number for 1932. In addition there were some who did not take the trouble to register.

The subjects outlined in the section programs showed careful selection of important phases of medicine which are of general interest.

The scientific exhibits were instructive and well arranged and were very well attended. The Shattuck Lecture, delivered by Dr. Elliott C. Cutler, was an important contribution to thoracic surgery. The text of this address appears as the leading article in this issue of the *Journal* and if read will dispel uncertainty in the minds of practitioners respecting the position which these additions to therapeutic resources hold. The surgeon may now augment to an important degree the work of the internist in dealing with nearly all conditions in the thorax.

The Council meeting was well attended and the business was carried on with reasonable dispatch. The details will appear in the *Journal* together with those of the general society as soon as they can be prepared by the Secretary. A communication in another place in this issue by Dr. Birnie, an ex-president, reflects the views of other members of the Council with respect to the appointment of certain committees, with a suggestion which may help in saving some time. Vice-President Walter A. Lane submitted a motion which will, if adopted, give to the Committee on Legislation the services of a lawyer in connection with work before legislative committees. Final disposition by the Council of this matter was deferred until the meeting in October. An animated discussion pertaining to the inclusion of the names of authors of radio broadcasts, brought out opinions pro and con, some evidently believing that this form of publicity might be construed as personal advertising.

It is desirable that the Fellows of the Society should be familiar with the proceedings of the Council and whenever there are definite opinions these should be conveyed to their representatives. A careful perusal of the complete record of the proceedings is in order.

The attendance at the annual dinner of 183 Fellows and guests was not so large as the importance of this function warrants. This may be partly due to the present economic conditions. Another explanation seems to be that the younger element in the society is not as a rule well represented at the annual banquet. This is regrettable for young physicians should enter into the social functions of the Society in order to enlarge their acquaintance with those who are carrying on the affairs of organized medicine in this Commonwealth. Perhaps, in the future, advanced publicity relating to speakers may attract a larger number.

The after-dinner speaking was interesting and the response to the introduction of Dr. W. H. Robey, the incoming President, gave evidence of cordial approval of this selection by the Council. Dr. Robey spoke briefly with a few humorous illustrations of his surprise in having been chosen to this high office.

His Excellency, Governor Ely, came late having had to attend a previous dinner. He paid high tribute to the medical profession and the Massachusetts Medical Society for the service which is being given to the State and her citizens. His sympathy with the traditions of medicine was shown when he assured the audience

that there will be no danger of the encroachment of state medicine on the work of the family doctor during the remainder of his term of service.

In response to the introduction of the Rev. Ashley D. Leavitt, D.D., of Brookline as a representative of the clergy, Dr. Leavitt expressed his feeling of obligation to the medical profession especially because of his close association with a group of doctors in his parish, who are his loyal supporters as well as representatives of the best in the profession. He found that physicians depend upon the clergy in dealing with the problems of illness as shown by opportunities to supplement the application of the resources of medicine in ministering to the spiritual needs of the afflicted. Hence he always feels perfectly at home in gatherings of doctors and admires the untiring persistence of physicians with no evidence of slowing down when their services are needed. He made many apt allusions to the habits of medical men and looks forward to growing interdependence of the clerical and medical professions.

Dean Winternitz of the Yale Medical School interspersed his address with stories which were not only humorous but included pithy suggestions respecting medical practice. He believes that the field of specialism is overcrowded because we have 25 per cent of practicing physicians recognized as restricting their work to limited fields, whereas all reasonable demands for medical care would be covered with about 20 or 25 per cent of specialists and 70 to 75 per cent of general practitioners. He closed with an interesting story of an old family doctor in Connecticut who illustrated, by his life, the highest ideals of medicine.

Robert T. Bushnell, Esq., a practicing lawyer and former district attorney of Middlesex County spoke at length on the causes of, and procedures connected with, malpractice suits. He explained that the term malpractice is an unfortunate designation, because it is apt to convey the impression that there is some immoral question in the issue, whereas these suits are theoretically instituted to recover damages for alleged mistakes or lack of proper care on the part of the doctor in a given case.

He acknowledged that there are shyster lawyers as well as quack doctors and that there are justifiable suits against lawyers for incompetence, carelessness, or other reasons and yet he believes that the great majority of both professions are honorable and high-minded persons. He expressed the opinion that most suits against physicians for alleged malpractice are unwarranted and should never have been brought and was hopeful that they would become less common, but even so there have been cases where such suits were reasonable. In support of this he cited hypothetical cases and proceeded to score the medical profession in so far as it is almost impossible to find a doctor who will testify against a fellow practitioner, whereas lawyers are ready to lend influence to convict an unworthy attorney.

He criticized experts and expert testimony for he believes that this resource in court procedure is a "racket".

The dinner meeting was adjourned at about eleven o'clock.

At the annual meeting of the Society at noon on Wednesday, the third day, the especially interesting features, after the reports by the Secretary, were the address by the President and the Annual Oration by Dr. Channing Frothingham. The President was given a mandate in 1932 to prepare a brief address to be read at the Annual Meeting of the Society for the purpose of reviewing the affairs of the Society and submitting recommendations for action by the Council.

One of the early observations of the President was that such an address cannot always be brief, and sufficiently important matters were presented in the address to substantiate this statement. He very definitely pointed out that this presidential address should be an early feature of the meetings; otherwise suggestions must wait four months for appropriate action in the Council. In this delay there may be danger of the depressing influence of cold storage. He suggested that it may be well to include under this mandate the appointment of a committee on officers' reports which shall study and report on all recommendations. In discussing the question relating to the election of the President, which has been mentioned from time to time, he advised careful consideration of any change and did not feel warranted in giving specific advice.

In calling attention to possible defeat in the present procedure relating to acceptance of candidates for admission to the Society, he expressed his conviction of the need for greater care. Facts seem to demonstrate the soundness of this contention. Another suggestion respecting the inclusion of definite attention to the addition of courses in medical ethics and economics in the curricula of medical schools seems sound, but the Society has no power respecting this other than that of suasion. This part of the address may with propriety be submitted to the medical schools. His analysis of the quality and scope of the scientific programs of the Annual Meeting with suggestions of general rather than so many special meetings will appeal to some of our Fellows and calls for action. Perhaps a survey of the attitude of the Fellows of the Society toward this question may be helpful in solving the problem.

The discussions on the costs of medical care and efforts in various sections of the country to meet local conditions seem to put before the

Society its responsibility with reference to any defects in service with possible changes which must always be in conformity with ethical standards.

This address should be accepted in the spirit of its author and the treatment of it warrants concentrated attention. It was a good beginning of an important addition to the Annual Meeting.

The Annual Oration

Here Dr. Channing Frothingham emphasized the necessity of participation in the problems indicated in the trends in medical practice by the profession. In the opening section of his oration he laid the foundation for dealing with four main subjects. These are Medical Education, Public Health, the Nursing Profession and the Organization of the Profession for the Practice of Medicine.

In considering each of these subjects Dr. Frothingham presented statistical and general evidence tending to show that the "Trends in Medicine" indicate the necessity of a careful evaluation of what has been proved to be good and applicable to conditions as they were found in earlier stages of medical practice and he then proceeded to advise changes which seem to be indicated. His views were expressed clearly and whether endorsed or criticized must be regarded as the result of careful consideration of the subject in the broadest sense and there was evidently in the minds of the audience a full appreciation of the speaker's loyalty to his convictions, the clarity of his reasoning and excellence of presentation.

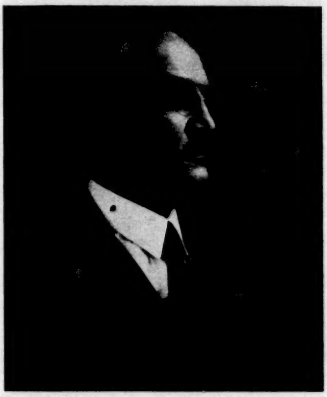
It is impossible to do justice to this oration in the brief review which our space permits and we earnestly ask our readers to give ample time to a careful reading of the text. The paper in full will appear in the *Journal* of June 29.

This brought to a close the anniversary exercises which were universally and enthusiastically approved by those who were able to attend.

THE OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY

The President

At the meeting of the Council of the Massachusetts Medical Society on June 6, 1933, Dr. William Henry Robey was elected President. Dr. Robey was born in Boston, July 3, 1870. His education was acquired in the English High School, The Lawrence Scientific School and the Harvard Medical School. He received the degree of M.D. in 1895. He was Assistant in Bacteriology in the Harvard Medical School, 1900-1904, after which he passed through various grades in the Department of Medicine and was elected Clinical Professor of Medicine in 1927. He became Clinical Professor of Medicine, Emeritus, in 1932, but has continued active teaching in the Medical School. He was for many years Chief of the Second Medical Service and President of the Senior Staff, Boston City Hospital. He is now Consulting Physician to the Boston City Hospital, the Milton and Norwood Hospitals. He was George W. Gay Lecturer, Harvard Medical School in 1930; President of the American Heart Association, 1929-31, and the New England Heart Association, 1927-30. He served in the World War as



DR. WILLIAM H. ROBEY.

Chief of the Medical Service of the Base Hospital at Camp McClellan, Anniston, Alabama; was Lieutenant-Colonel and Consultant in Medicine for the Advanced Section of the American Expeditionary Forces on the staff of Brigadier-General W. S. Thayer; is now a Colonel in the Medical Reserve Corps of the United States Army and Commanding Officer of the 7th Hospital Center. He has served on many committees of the Massachusetts Medical Society; was Shattuck Lecturer in 1929; Delegate to the House of Delegates of the American Medical Association and recently President of the Suffolk District Medical Society; Fellow, American Medical Association, American Association for the Advancement of Science, American College of Physicians, Member of the American Association of Pathologists and Bacteriologists, the American Clinical and Climatological Association. He published "The Causes of Heart Failure", 1923, Harvard University Press; "Headache," 1930, J. B. Lippincott Co., and also about sixty articles in various medical journals, principally on cardiac and circulatory diseases.

The Vice-President

Dr. P. E. Truesdale was born in a lumber camp in the Canadian Forests on August 12, 1874, where his father with another had formed a Land Company. Dr. Truesdale came to Fall River at the age of five and was educated in the public schools of that city. In 1898 he received the degree of M.D. from the Harvard Medical School and interned at the Boston City

DR. PHILEMON E. TRUESDALE.

and the Boston Lying-In Hospitals. He engaged in general practice in Fall River in 1900.

In association with Dr. A. C. Dedrick he inaugurated a surgical service at the City Hospital, then a pauper institution. This service developed quite rapidly and in 1905 a complete staff was appointed for the hospital. Dr. Truesdale then withdrew from general practice and devoted his attention to the development of a small hospital for the care of surgical cases. In 1909 he constructed a modern hospital building which has formed the central unit of the present institution.

As early as 1902 Dr. Truesdale published an article in the *Boston Medical and Surgical Journal* advocating cesarean section for placenta praevia with the report of a successful case. In 1917 in delivering the annual oration before the Massachusetts Medical Society he used as his subject "Military Medicine" and urged that a place be made for this subject in the curriculum of the Harvard Medical School.

Dr. Truesdale was one of the founders of the American College of Surgeons in 1913 and now serves on its Board of Governors. In 1915 Dr. Truesdale with Dr. Peer P. Johnson of Beverly was instrumental in founding the New England Surgical Society. In 1918 Dr. Truesdale was elected to fellowship in the American Surgical Association.

In June of 1917 he joined the Yale unit with a rank of Captain and sailed for France on August 20, 1917. A portion of the time he served at the front in French hospitals during the first engagement of the American troops in the battle of the Appremont Forest in April, 1918. He also served with the 26th Division, the 82nd Division, the 89th Division and the 2nd Division when they were in action on the American front. Dr. Truesdale returned from France in March, 1919 with the rank of Major.

In 1921 the demands upon the Truesdale Hospital had outgrown its capacity. The hospital was reincorporated under the Revised Laws of the state as for charitable institutions of a semi-private character. Dr. Truesdale retained control as its director, and a Board of Trustees was appointed. In a campaign for funds $200,000 was raised and a new wing was constructed on the south end of the original building. In 1926 Mr. Earle P. Charlton, a member of the Board of Trustees, made a contribution of $500,000 for the construction of the Earle P. Charlton Surgery and Laboratory. This was added to the north side of the hospital as another wing. Mr. Charlton upon his death bequeathed a trust fund of $500,000 as an endowment for the hospital.

Dr. Truesdale made his first contribution on hernia of the diaphragm in 1921 and annually since that time until 1929, when the collected contributions on this subject were compiled in the form of an exhibit in the scientific section of the American Medical Association at the meeting in Portland, Oregon. The mechanism of diaphragmatic hernia was demonstrated by a motion picture. This exhibit received the gold medal award. Dr. Truesdale has contributed the chapter on the diaphragm in Nelson's Surgery.

In 1927 he delivered the Shattuck Lecture before the Massachusetts Medical Society dealing with the subject of group practice. At this time he was President of the Alumni Association of Harvard Medical School.

At the current meeting of the Massachusetts Medical Society Dr. Truesdale gave a demonstration of the talking medical motion picture with all its improvements and refinements up to the present date. The film represented a new departure in medical motion picture photography. It had color, sound, and animation on 35 millimeter safety stock. It dealt with an anatomical subject, cranial nerves, describing and graphically illustrating each of the first six cranial nerves from its point of origin in the brain, its course, relations, distribution and function.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

CUTLER, ELLIOTT C. M.D. Harvard University Medical School 1913. F.A.C.S. Moseley Professor of Surgery, Harvard Medical School. Surgeon-in-Chief, Peter Bent Brigham Hospital. His subject is "The Origins of Thoracic Surgery." Page 1233. Address: 721 Huntington Avenue, Boston.

MINOT, GEORGE R. A.B., S.D. (Hon. Harv.), F.R.C.P. (Edin. Hon.), M.D. Harvard University Medical School 1912. Professor of Medicine, Harvard University. Director, Thorndike Memorial Laboratory and Visiting Physician, Second and Fourth Medical Services, Boston City Hospital. Member, Board of Consultation, Massachusetts General Hospital. Consulting Physician, Peter Bent Brigham and Beth Israel Hospitals. Member, Cancer Commission, Harvard University. Address: Thorndike Laboratory, Boston City Hospital, Boston. Associated with him are

STRAUSS, MAURICE B. A.B., M.D. Johns Hopkins University School of Medicine 1928. Assistant in Medicine and Tropical Medicine, Harvard Medical School. Assistant Resident, Thorndike Memorial Laboratory and Resident, Tropical Medical Service, Boston City Hospital. Address: 818 Harrison Avenue, Boston. And

COBB, STANLEY. A.B., M.D. Harvard University Medical School 1914. Bullard Professor of Neuropathology, Harvard University. Visiting Neurologist and Director of Neurological Laboratories, Boston City Hospital. Address: Boston City Hospital, Boston. Their subject is "'Alcoholic' Polyneuritis: Dietary Deficiency as a Factor in Its Production." Page 1244.

ADAIR, FRANK E. A.B., M.D. Johns Hopkins University School of Medicine 1915. F.A.C.S. Attending Surgeon, Memorial Hospital, New York City. Consultant Director, Strang Cancer Clinic, New York Infirmary for Women and Children, New York City. His subject is "Clinical Manifestations of Early Cancer of the Breast, With a Discussion on the Subject of Biopsy." Page 1250. Address: 70 East 77th Street, New York City.

PHANEUF, LOUIS E. Phm.D., Ph.C., M.D. Tufts College Medical School 1913. F.A.C.S. Professor of Gynecology, Tufts College Medical School. Chief Gynecologist and Obstetrician, Carney and Malden Hospitals. Surgeon, Gynecological Department, Boston Dispensary. Consulting Gynecologist, Beth Israel Hospital, Boston; Leonard Morse Hospital, Natick; Henrietta D. Goodall Hospital, Sanford, Maine and Attleboro Hospital, Attleboro, Mass. Consulting Gynecologist and Obstetrician, Fall River General Hospital, Fall River, Mass., and St. Anne's Hospital, Fall River, Mass. Address: 270 Commonwealth Avenue, Boston. Associated with him is

GRAVES, ROGER COLGATE. A.B., M.D. Syracuse University College of Medicine 1918. F.A.C.S. Urologist to the Carney Hospital. Genito-Urinary Surgeon to the Pondville Hospital. Member of Staff of the Deaconess Hospital. Member of the Consulting Staff of Brockton, Quincy and Winchester Hospitals. Address: 12 Bay State Road, Boston. Their subject is "An Extreme Case of Pyelitis of Pregnancy Treated by Nephrostomy with Recovery and Subsequent Successful Delivery." Page 1255.

ARMSTRONG, CHARLES. B.S., Sc.D., M.D. Johns Hopkins University School of Medicine 1915. Surgeon, U. S. Public Health Service. His subject is "The Diagnosis of Mild Smallpox and Scarlet Fever." Page 1257. Address: National Institute of Health, Washington, D. C.

MASSACHUSETTS LEGISLATIVE NOTE

SENATE BILL NO. 442

This bill is substituted by Amendment for House Bill No. 1369 and provides for striking out sections thirteen, fourteen, fourteen A, fifteen, eighteen and substituting in their places certain changes in chapter ninety-four. The changes would give to the milk Regulation Board after hearing and with the approval of the Governor and council, authority to make rules and regulations establishing grades of milk together with standards of production and restrictions as to the sale of milk.

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

BEHAVIOR AND HEALTH*

BY STANTON GARFIELD, M.D.

I am going to say at the beginning that this talk is strictly confidential for those who have been children, and remember what it was like.

Before discussing the relationship of behavior and health, I wish to emphasize one point, namely, that "good" and "bad" behavior are relative. We use the term, "white lie," meaning thereby, that under certain circumstances, a partial truth, or even an untruth, is justifiable. We, however, consider lying as bad. We recognize, too, that we can-

*April 18, 1933. Station WBZ, 4:30 P.M.

not judge the behavior of a child of two on the same basis as we can that of a child of ten. Behavior is good when it meets with our approval. We approve of it when it measures up to our ideals and standards of living.

Behind these standards there is frequently an element of health. We did not give up eating with our fingers simply because the more respected members of our society started using a fork. We did it more fundamentally because we found that better health resulted. Now we consider correct use of the fork or spoon as essentials to good table manners, a form of behavior.

Similarly many forms of politeness have an origin based on good health. The origin may have disappeared, but politeness remains as a standard of judging behavior.

In the small infant, the importance of relating behavior and health is obvious. This is so because a baby cannot talk. We must interpret all his feelings and desires through his behavior. Even when the child grows older and learns to understand, and to make himself understood through language, we should not forget the saying, "Actions speak louder than words."

We are most apt to pay attention to behavior when we think of the latter as indicating ill health. Why? Because through the tremendous advances in recognition, cure and prevention of disease made in the past few years, the greatest emphasis has been placed on physical health.

Let us illustrate this by two simple examples: Tommy is six years old. His mother is worried and harassed because he doesn't eat well. He never would learn to feed himself until he was four. Ever since then, he has required much coaxing and scolding at meal times. He is not what one would call a bad child, or difficult to manage in other respects. But three times a day a struggle arises the minute he sits down to eat.

Elizabeth is eight. She is a well-mannered, polite child, very able and ambitious in school and minutely painstaking in everything she does. The one chief problem with her is her temper. Feeling keenly her inadequacy to compete with other children in games requiring physical dexterity, she is apt to resort to tantrums. Her ambition demands that she be first in everything.

Of these two children, Tommy is more apt to get outside help. This is so because his behavior, though not indicating perhaps actual illness, nevertheless, if not corrected, would more obviously seem to lead to ill health. It is evident, however, that both of these children have something the matter with them, and need help.

But physical health is after all a means, not an end. It is the foundation upon which health in its broadest sense rests. We should not pay attention to stubbornness only when it results in not putting on rubbers and hence catching a cold. We do not need to claim that fear and good health are related, only in such cases as when a little child sprains his ankle attempting to dodge a thunderbolt. The important point is the fact that stubbornness, cowardice, fear, dishonesty and so forth, when developed beyond normal bounds, are of themselves poor health. All stubbornness and dishonesty do not lead to jail. All cowardice and fear do not lead to the insane asylum. No more do all sore throats mean diphtheria. If, however, these early behavior manifestations are not recognized or prevented, future maladjustments may result. Any maladjustment to life means ill health. All behavior, good or bad, should be regarded as an indicator of either good or bad health.

But why do we behave as we do? A child doesn't tell the truth simply because he was born of honest parents. He doesn't steal because he inherited a mental twist. No more does a child become a great singer simply because he comes of a long line of musicians. A different apportionment of hereditary talents, instincts and traits, accounts for differences in people's character and make-up. This does not, however, explain why people are successful or unsuccessful, nor why some children are "good" or "bad". What use we make of our instincts and talents depends upon our experience and training.

In the process of training, the most important single factor is habit formation. We grown-ups act or think as we do almost entirely from habit. The first time we do something it may be difficult and clumsy, but after constant repetition, the habit is formed, and the act may become entirely automatic, driving an auto, reading a book, tying one's shoes. Too much criticism or conflicting advice during the process of learning is apt to result in failure. It is comparable to the "back seat driver".

When we realize that after all, we as parents have a very direct part to play in helping our child form good habits, and when we stop to think of the close relation between habits and behavior, should we not pay more attention to the real underlying cause for this behavior?

Anger is an instinct with which we are all born. It is an asset if properly directed. Elizabeth had temper tantrums, but perhaps as a little girl she was never taught self-control. Maybe her parents screamed back at her and gave her a perfect example of peevishness, which was too perfectly imitated.

Tommy didn't eat well. I wonder if his interest in managing the spoon was cultivated when it first cropped out? I wonder if he was rushed through meals to save time? I wonder if he realized that it was his stomach and no one else's that was empty?

If we pay attention to these children because of their behavior, as well as to those others who may seem disobedient, dishonest, cowardly, cruel and so forth, we have a clear-cut hint as to the treatment of such behavior. In the first place, understand the child. Try to recall, also, your own

thoughts and emotions when as a child you acted the way your child is now acting. Think of the effect your parents and other grown-ups had upon your thoughts and emotions. Perhaps you told a lie once. If so, was it because you had to humiliate yourself in front of others? Was it because you were falsely accused? Were you obliged to incriminate yourself by always answering direct questions, "Did you do this?" or "Why didn't you do that?" Or were you, perhaps, brought up to be scared of your parents?

A hundred other such questions should come up in our minds before we blame our children too harshly for their behavior. We admit our ability to teach children how to dress themselves by letting them learn this complicated process gradually, and through constant repetition. Are we not responsible also for establishing within them good habits of thought? We have complete power over the small baby. We feel obliged to keep him healthy, even in spite of opposition on his part. This eventually leads us over what we think are short cuts to the attainment of his health. These are attempted by means of a long list of "Do this" and "Don't do that." But there soon comes a time when these short cuts fail. Unless an older child is willing to coöperate, we cannot force him to live up to even the simplest rules of health. Their willing coöperation is needed to guarantee health after apron strings are cut. The earlier we can cut these strings, the sooner health habits become automatic.

We must, therefore, respect a child's thoughts and emotions as well as his teeth and tonsils. Stop and think that sometimes a dose of castor oil can do more harm than good if administered in such a way as to antagonize or terrorize. Lack of emotional control leads to stubbornness, fear and the like, and results in asocial behavior. The mind through thoughts controls emotions and is trained through habit formation. Behavior is the outward manifestation of thoughts. It affects, and is affected by, physical and mental health. Behavior and health are related just as intimately as any other example of cause and effect.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MAY, 1933

Scarlet fever continues its descent from the higher level established last year and has finally dropped below the mean for the month of May.

Chicken pox continues its high prevalence, there being only one year in the past in which a higher number has been reported for this month.

The number of cases of typhoid fever has increased slightly this month but the total for the year to date is not so high as it was last year.

Diphtheria continues its steady decrease, making another low record for the month of May.

Lobar pneumonia has been less prevalent than in any other year in the past.

Measles, German measles, mumps and epidemic cerebrospinal meningitis continue at the low levels noted in previous reports.

Tuberculosis, both pulmonary and other forms, does not show any tendency to climb to higher levels than for previous years.

Whooping cough and anterior poliomyelitis were reported in about the number of times expected.

MONTHLY REPORT FOR MAY, 1933

Disease	May, 1933	May, 1932	Average*
Anterior Poliomyelitis	5	2	3
Chicken Pox	1090	938	952
Diphtheria	92	135	280
Dog Bite	716	660	360
Epidemic Cerebrospinal Meningitis	5	7	14
German Measles	107	100	276
Gonorrhea	454	473	477
Lobar Pneumonia	285	374	641
Measles	2467	4464	3603
Mumps	779	1386	1007
Paratyphoid Fever	2	1	—
Scarlet Fever	1522	1961	1584
Syphilis	422	365	304
Tuberculosis Pulmonary	349	338	443
Tuberculosis Other Forms	57	55	54
Typhoid Fever	15	13	11
Whooping Cough	710	815	1068

*Average number of cases for May during the preceding five years.

RARE DISEASES

Anterior poliomyelitis was reported from Adams, 1; Boston, 1; Dedham, 1; Northfield, 1; Pittsfield, 1; Total, 5.

Anthrax was reported from Lynn, 1.

Dysentery was reported from Worcester, 1.

Encephalitis lethargica was reported from Medford, 1; Northampton, 1; Out of State, 1; Total, 3.

Epidemic cerebrospinal meningitis was reported from Boston, 1; Brockton, 1; Brookline, 1; Orange, 1; Quincy, 1; Total, 5.

Malaria was reported from Swampscott, 1.

Septic sore throat was reported from Boston, 8; Cambridge, 2; Chicopee, 1; Dartmouth, 1; Lowell, 1; Lynn, 1; Northampton, 3; Salem, 1; Total, 18.

Tetanus was reported from Attleboro, 1.

Trachoma was reported from Boston, 1.

Undulant fever was reported from Orange, 1.

THE AWARD OF THE DUTCH RED CROSS SOCIETY GOLD MEDAL

The Dutch Red Cross Society, under the presidency of Prince Hendrik, awarded its gold medal on April 19, 1933, to Dr. Karl Landsteiner, Member of The Rockefeller Institute for Medical Research, for his discovery of the blood groups in relation to blood transfusion.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1932 AND SEVEN YEAR AVERAGE

MONTH ENDING MAY 27, 1933

	1933					1932			
Diseases	Week ending May 6	Week ending May 13	Week ending May 20	Week ending May 27	Average cases reported for week corresponding to May 27 for past seven years	Week ending May 7	Week ending May 14	Week ending May 21	Week ending May 28
Cerebrospinal Men.	—	—	1	1	1	—	1	1	—
Chicken Pox	132	196	184	189	86	91	101	113	120
Conjunctivitis Inf.	—	—	—	—	3	2	—	16	11
Diphtheria	1	—	5	2	16	3	3	3	6
Dysentery Bacillary	1	—	—	4	—	—	—	—	—
German Measles	12	15	15	15	43	4	2	8	5
Influenza	4	4	3	2	7	20	7	3	3
Measles	274	305	281	226	250	231	296	106	273
Mumps	73	90	63	93	64	51	73	84	71
Paratyphoid Fever	—	—	—	1	—	1	—	1	1
Pneumonia (Broncho)	14	14	9	17	27	34	40	23	24
Pneumonia (Lobar)	28	21	21	28	33	46	34	35	47
Scarlet Fever	106	113	112	85	92	106	97	299	127
Septic Sore Throat	3	1	2	1	—	2	5	1	4
Smallpox	—	—	—	2	—	—	—	—	—
Trachoma	2	—	—	—	—	—	—	1	—
Trichinosis	1	—	—	—	—	—	—	1	—
Tuberculosis (Pul.)	37	36	23	19	29	40	32	21	36
Tuberculosis (O. F.)	2	3	1	3	4	4	3	4	2
Typhoid Fever	3	1	3	1	—	—	2	1	2
Undulant Fever	1	—	—	—	—	—	—	—	—
Whooping Cough	66	60	50	50	53	74	129	96	96
Gonorrhea	38	54	25	41	37	23	21	37	27
Syphilis	26	41	42	35	32	55	45	47	28

Remarks: No cases of Asiatic cholera, glanders, plague, or yellow fever during the past seven years.

RESOLUTION PRESENTED TO THE HOUSE OF DELEGATES, AMERICAN MEDICAL ASSOCIATION.

1933 ANNUAL SESSION

Whereas: The problems and methods of Birth Control are of vital concern to the health as well as the social and economic welfare of our American people, and,

Whereas: The statements of proponents and opponents of birth control are at wide variance, thereby creating confusion and uncertainty, and,

Whereas: A demand has been made by various groups for dependable evaluation of methods of contraception and of the conditions that justify their employment, and,

Whereas: These questions are intimately related to medical science and medical practice, therefore,

Be It Resolved: 1. That this House of Delegates create a special committee of five on "The Study of Contraception" to be appointed by the Speaker, with the advice of the Executive Committee of the Board of Trustees,

2. That this committee is hereby instructed to study the problem of birth control in all its aspects, particularly as they relate to methods of contraception, conditions indicating its employment, and the best manner of imparting instruction to physicians and to the lay public,

3. That this committee be provided by the Council on Pharmacy and Chemistry with a statement of the value and effectiveness of contraception products and preparations that are or may be recommended by manufacturers, and,

Be It Resolved: That the Board of Trustees be requested to instruct the Council on Pharmacy and Chemistry to render all reasonable assistance and advice to this special committee, and to provide this special committee with a fund to be determined after conference with the Committee Chairman, for clerical and correspondence expenses, and,

Be It Resolved: That the report of this committee, together with all its findings and recommendations, be not disclosed until it has been presented at the 1934 Executive Session of this House of Delegates for consideration and action by this House of Delegates, and,

Be It Resolved: That the appointment of this special committee shall in no way be construed as an endorsement of birth control on the part of the American Medical Association and that, on the contrary, the appointment of this committee is for the purpose of compiling dependable facts for future guidance when dealing with this question as closely related to public health and medical practice.

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending May 20, indicate a mortality rate of 10.6 as against a rate of 11.4 for the corresponding week of last year. The highest rate (18.2) appears for Utica, N. Y., and the lowest (4.7) for Miami, Fla., and Yonkers, N. Y. The highest infant mortality rate (8.3) appears for Albany, N. Y., and the lowest for Des Moines, Ia., Fall River, Mass., Kansas City, Kans., Oklahoma City, Okla., Peoria, Ill., San Diego, Calif., Utica, N. Y., Waterbury, Conn., and Youngstown, O., which reported no infant mortality.

The annual rate for 85 cities is 11.8 for the twenty weeks of 1933, as against a rate of 12.4 for the corresponding period of the previous year.—*Bureau of the Census.*

CORRESPONDENCE

STATE MEDICINE FOR THE INDIGENT: A RATIONAL PLAN

Editor,

The *New England Journal of Medicine,*

In the present economic crisis the medical care of the indigent stands out as a most pressing problem for our profession. As pointed out in an editorial in the November 24, 1932 issue of this *Journal* under the title, "Plight of Hospitals and Doctors," it imperils our charitable institutions and imposes upon private physicians a crushing burden. Unfortunately, it seems likely to haunt us. Even before the full effects of the current sociologic revolution were ascertainable, it was acknowledged by every member of the Committee on the Costs of Medical Care as a proper obligation of the public.

On account of financial difficulties, however, many cities and towns cannot provide adequate medical care for their impecunious. Municipal clinics and hospitals are overcrowded. City physicians are overworked. Among that class which on the one hand has ordinarily enjoyed the benefits of scientific medicine and on the other has supplied the material nurturing it, quality in medical practice is giving way to quantity. The practice of scientific medicine is actually declining with the falling standard of living, even faster than education. Unlike educational advantages, however, medical wants cannot be deferred without the risk of lurking disaster. Local health agencies, both public and philanthropic, therefore, are in need of prompt relief.

In the past the commonwealth has repeatedly aided the smaller political divisions in medical matters. It has furnished hospitals for the insane, the feebleminded, the epileptic, the tuberculous, and even the cancerous. It has long maintained a large general hospital for the needy without permanent legal residence in any of its communities. So, during this age of rapid transportation and quick communication, there is ample precedent for the state undertaking the exigent medical care of the indigent.

For this there are additional reasons. Unless the Commonwealth lightens the load straining the fiscal structure of most cities and towns, it may have to take upon itself the responsibility of the entire welfare of the poor. Besides, most townships and some cities even are too small to provide a complete medical service such as is necessary for managing those cases requiring special knowledge and skill. Few could proffer attractive contracts because of the baneful influence of local politics. At this time when many communities are clamoring for financial assistance from the state, moreover, the political situation is singularly favorable for the launching of this project.

To carry it out, contract practice would be indispensable. This is one of the bogeys eluding definition by our anachronous code of ethics. To those who have earned the degree of doctor of medicine, only one form is acceptable. It should first of all be full-time service, because in general but one master can be served at one time. It must allow the physician to adhere to the inviolable principle that the patient's welfare receive primary consideration. It should do even more. It should remove all possible temptations to ignore or disregard this sacred trust. It should encourage industry and study, and afford opportunities for the maximum intellectual development and the exercise of inherent and acquired talents. It should reward faithful service and superior ability with commensurate pay. Since scientific medicine depends upon teamwork, it should insure harmonious and effective coöperation. It should reasonably guarantee continuity of employment and also permit justifiable or beneficial transfer from one district or department to another without loss of seniority or rank. It should make provision for disability from disease or injury, for recreation, for vacations, and for instruction. Since few physicians can successfully manage their business and financial affairs, it should assure its personnel decent provision for incapacity and retirement. For doc-

tors in general the essentials constitute the ideal type of contract practice.

This really presupposes an organization comprising many such hospital units as were recommended by the majority report of the Committee on the Costs of Medical Care. It is incompatible with competitive individualism. It underlies the commissions of the medical officers of the army and navy, both of which dispensed with individual contract surgeons many years ago. It prevails also in the federal public health service and in the Panama Canal Zone. It is tacitly approved by the American Medical Association and other national societies. Having successfully coped with the exigencies of the World War this commission form, the only one universally applicable and thoroughly tested, is part and parcel of a military medical corps.

That this health organization, which puts prevention before cure and fosters early rather than late consultations, works equally well for civilians is clearly shown by the survey of the organized medical services at Fort Benning, Georgia, made by I. S. Falk, Ph.D., of the research staff of the Committee on the Costs of Medical Care. At this post about half of the seven thousand, seven hundred and ninety persons are practically similar in age and sex distribution to a civilian population and live under corresponding conditions. In the January 19, 1933 number of this *Journal* under the title, "Organized Army Medical Service Sets Example for Civilian World, Report Disc'oses," is a succinct review of Dr. Falk's published report concluding with this: "The author states that the study has indicated that the medical service, as operated under military auspices, may well serve as a pattern for a similar organization in civilian communities, where a coördinated agency of the kind is otherwise feasible and desirable."

This organized medical service was also commended by both Dr. David Riesman, Professor of Clinical Medicine at the University of Pennsylvania, and Dr. George P. Muller, Professor of Clinical Surgery, at the same medical college. As two of the three official consultants of the committee, they made personal investigations and contributed specific reports upon certain phases of the organization in the publication of Dr. Falk. The internist declared, "The work in internal medicine including psychiatry is virtually as good as it is in the best civilian hospitals and private clinics." The surgeon correspondingly stated, "The patients at Fort Benning are receiving excellent surgical care."

This military form of organized service is further extolled by the same surgeon as follows: "The advantages of the plan at Fort Benning are (1) the organization provides that a patient may be sent promptly to the hospital to be examined and treated by an expert surgeon; (2) members of the surgical staff are exclusively interested in the small group of patients under their individual care and there is no delay in the handling of complications or emergencies; (3) the close association of the entire medical personnel makes for care and frequency of informal consultations."

The two final paragraphs of the "Abstracts of Publications Nos. 17 to 21" of the previously mentioned committee upon this example of organized medical service are here cited as additional testimony of its efficacy:

"In conclusion, this brief abstract has presented a résumé of certain distinctive features of the Fort Benning type of medical service. The plan effects integration of personnel and facilities. Large volumes of good medical care are provided economically by efficient utilization of resources, by minimizing wastes arising from lack of coördination between personnel and patients, by emphasizing preventive services, and by reducing many useless and unwise expenditures common in the spending habits of people who purchase their medical care from uncoördinated agencies.

"For a per capita cost of about forty-one dollars per annum (exclusive of the fixed charges on hospital services), the Fort Benning medical organization is able to provide three times as many home and office calls and more than four times as much hospital care as civilian families in the general population were able to procure for approximately the same expenditure. When appropriate allowances are made for certain military characteristics of the organization, it is estimated that the cost of medical care for the family population at Fort Benning is thirty to thirty-five dollars per capita."

This model of corporate medicine appealed to Dr. C.-E. A. Winslow, Professor of Public Health at Yale Medical College. As the chairman of the commission appointed by the League of Nations to investigate the diverse schemes of health insurance of European countries and as the vice-chairman of the committee on medical care and as chairman of its executive committee, he is eminently qualified to appraise it. In his speech before the New York Academy of Medicine published in this *Journal* of December 22, 1932, he asserted unequivocally, "We have found an army post at Fort Benning, Georgia, spending $30 per capita for a service which in most respects seems ideal in quality."

The adaptation of this system of military medicine to the care of the needy throughout the state is quite tenable. It is proposed that the service for these unfortunates, who comprise most of the populace, be founded as a part of the public health commission of the commonwealth. It must be organized upon a military basis. Since the poor have no freedom of choice of medical attendant, such a plan obviously would not deny them a privilege they do not possess. It would require a central administrative bureau and a system of hospitals and subsidiary stations arranged according to the population and furnishing a universal service including the specialists. This conforms to the committee's specific recommendation in which every

member concurred, that medical activities should center about hospitals.

This plan has many sound virtues. A state-wide system manned and managed by doctors without the direct intervention of laymen would be subject to the least possible political interference. It would certainly be insignificant in comparison to the present meddling with the local health agencies. The larger experience of the state with organized medical services and its greater purchasing power should materially reduce the cost of caring for the needy. The superior systematic medical care available to the indigent under the proposed public service in contrast to the haphazard and superficial treatment ministered to so many nowadays ought to have the same tendency. Organization as usual, then, would bring about definite economies.

It would do more. It would keep the practice of medicine up with the progress and sustain the morale of its personnel. Through its comprehensiveness it would permit each of the members to rise to the highest possible position for which he was qualified and enable him to pursue that branch of medicine for which he may be best fitted. It would retain the good men who are now available for enrollment, for they would appreciate the advantages to be gained from both harmonious coöperation and individual rivalry. The opportunity to practice his profession intelligently would supply the stimulus to effort. Moreover, spared the worries incidental to private practice he could devote his full time and energies to his professional duties. Being able to practice what he preaches, he could besides working more sensibly play more regularly. He would be kept fit physically and mentally. Orators at annual meetings of the Massachusetts Medical Society have deplored the lack of proper custodianship of the doctor's own health. He could live abundantly, reasonably assured of congenial occupation so long as he attended to his duties and met his responsibilities. Like other public servants, teachers and judges, as well as lay employees of the government, he could look forward to a tranquil old age spent in retirement at a safe distance from the poor house.

This proposition, by which alone any immediate use can be made of the vast amount of work of the Committee on the Costs of Medical Care, should enlist the support of the majority of our profession. It will benefit some indirectly by relieving them of the burden put upon their strength and their expenses by charity patients; others directly by better compensation and more congenial occupation. The practice of scientific medicine that it will foster will prove much more satisfactory and inspiring than the struggle for an uncertain livelihood or the scramble for elusive luxuries. Unless it be instituted, the outlook portends a prolonged period of increasing medical chaos producing cut-throat competition and gradual subordination of many physicians to laymen.

To be sure, certain objections can be raised against this proposal as readily as against any innovation. Who are the indigent? They are the medically indigent, those who cannot afford to spend for the medical care of themselves and their dependents an average of thirty-five dollars a year per capita. Since this nation has come of age, they are destined to remain more numerous in the future than in the past. Is it class legislation? Yes; so is the income tax. As private charities fail, however, humanity will demand it, political economy will found it, and preventive medicine will justify it. What is to be the attitude of our profession? If its members cannot for the most part agree upon a plan for caring for those who cannot pay for their services, they have less chance of guiding the coming reformation of medicine than sociologists or even politicians.

In conclusion, State Medicine for the indigent under the propounded plan, far from being Utopian, is singularly practical and happily opportune. It would benefit the poor directly, others indirectly. No longer a bogey, it would be a boon to doctors as well as laymen. As a means of rescuing tottering townships from the brink of bankruptcy, it would instantly win sufficient political interest. For the exigent care of the large class of those in want, there is now needed a complete medical service organized upon a military basis.

Very truly yours,

G. W. Haigh, M.D.

THE FILING OF A BOND BY THE PLAINTIFF IN COURT ACTIONS

June 8, 1933.

Editor,

The *New England Journal of Medicine,*

For the second year in succession I have read the opinions of eminent members of the bar, in addresses at the annual dinner of the Massachusetts Medical Society, dealing with the subject of medical malpractice suits. Last year, the sympathetic Mr. Dodge; this year, the critical Mr. Bushnell.

May I make a suggestion to both of these gentlemen, to which I believe they can take no constitutional exceptions?

I suggest that a law be placed on the statute books, which would make certain actions of tort and contract, such as breach of promise, medical malpractice and kindred actions in which the element of slander arises, "ipso facto," cross-actions, and that the plaintiff, on entering the suit, be required to file a bond in sufficient amount, to satisfy any judgment which might be rendered against him.

In a word, the plaintiff claims injury; the defendant, slander. Such a law would give the defendant an opportunity, which he does not now possess, "to overtake the slander".

The filing of the bond by the plaintiff would go

far toward establishing the "bona fides" of his suit.

Equally, it would put the brakes on certain members of the legal profession, and would tend to make these actions less one-sided. While we are on the subject of the ethics of medical malpractice suits, the legal reaction to my suggestion might prove to be illuminating. Accordingly, I invite the eminent barristers, Mr. Dodge and Mr. Bushnell, to discuss, in your *Journal*, the legal possibilities of such legislation. Yours truly,

JOHN J. HURLEY, M.D.

IS THERE WASTE OF TIME AT COUNCIL MEETINGS?

June 7, 1933.

Editor,
The *New England Journal of Medicine,*

It seems to me and to many other Councilors of the Massachusetts Medical Society that too much of the time in Council meetings is consumed in appointing committees to consider restorations to fellowship in the Society and to the reading of reports of committees on restoration.

There is nothing in the By-laws of the Society requiring the appointment of committees to consider petitions for restoration to fellowship. (Chapter I—Section 8.)

Fellows of the Society who have voluntarily resigned and petition for readmission must appear before the Censors, who may approve or disapprove the petitions. (Chapter I—Section 7.)

It seems to me that Fellows deprived of membership in the Society for non-payment of dues, or other reason, in seeking readmission, might follow the procedure laid down in Chapter I—Section 7, namely—appear personally before the Censors and have the Censors satisfy themselves before approving such petitions that such applicants still meet the requirements of Sections 1 and 2 of Chapter I. The Council would then pass on the report of the Censors. This proposed procedure needs no By-law but merely the approval of the powers that be. It may be well to have these matters regulated by an addition to the By-laws for the purpose of uniformity and continuity of procedure.

Respectfully yours,

JOHN M. BIRNIE, M.D.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.
May 27, 1933.

Editor,
The *New England Journal of Medicine,*

In addition to the articles enumerated in our letter on April 29 the following have been accepted:

Lederle Laboratories, Inc.
- Ampules Glucose (U.S.P. Dextrose) Solution—Lederle, 20 cc.
- Ampules Glucose (U.S.P. Dextrose) Solution—Lederle, 50 cc.
- Ampules Glucose (U.S.P. Dextrose) Solution—Lederle, 100 cc.

Parke, Davis & Co.
- Antipneumococcic Serum (Felton) Type I
- Erysipelas Streptococcus Antitoxin Refined and Concentrated—P.D. & Co., 20 cc. syringe package

Sal-Ethyl Carbonate
- Tablets Sal-Ethyl Carbonate, 1 gr.
- Tablets Sal-Ethyl Carbonate, 5 grs.
- Tablets Sal-Ethyl Carbonate with Amidopyrine

Yours sincerely,

PAUL NICHOLAS LEECH, *Secretary,*
Council on Pharmacy and Chemistry.

RECENT DEATHS

COLGATE—CHARLES HENRY COLGATE, M.D., of 16 Webster Street, Rockland, died June 4, 1933, while attempting to rescue from drowning a neighbor's daughter, presumably from heart failure.

Dr. Colgate was born in 1874 and graduated from the Boston University School of Medicine in 1901. He joined the Massachusetts Medical Society in 1919 and was a Fellow of the American Medical Association. He was a World War veteran and held the rank of Major in the reserve corps and was a member of Rockland Post, American Legion. He practised in Lexington previous to his work in Rockland.

He is survived by his widow and a daughter.

DERVIN—PETER JOHN DERVIN, M.D., a prominent Dorchester physician, died June 9, 1933, after a lingering illness at his home, 157 Harvard Street, Dorchester. A native of Clinton, Dr. Dervin practised in Marlboro after his graduation from Holy Cross College, and the Albany Medical School in 1892. He came to Dorchester in 1904. He is survived by his widow, Mrs. Helen Crosby Dervin, a brother, Dr. Lawrence J. Dervin of Somerville, and two sisters, Mrs. Mary E. McIntyre of Somerville, and Mrs. Anna Walsh of Revere. Burial will be in Clinton.

FISH—LEWIS FISH, M.D., of 86 Day Street, Fitchburg, Massachusetts, died June 3, 1933. He was born in Preston, England, April 23, 1871 the son of John and Elizabeth (Isherwood) Fish. He graduated in medicine from the Baltimore Medical College in 1898 and joined the Massachusetts Medical Society in 1904. He started in practice in Fitchburg in 1899. He served in the Massachusetts State Board of Health as health inspector and later as district health officer, resigning his position soon after the change of the State Board of Health to the Department of Health. He served as chairman of the Fitchburg board of health from 1922 to 1925

and had acted as director of the children's health camp in South Ashburnham carried on by the Northern Worcester County Health Association.

He was a member of C. W. Moore Lodge of Masons. He is survived by his widow, Mrs. Annabel (Johnson) Fish, a daughter, a son, a granddaughter and a brother Dr. Ralph Charles Fish of Worcester, Mass.

HODGDON—RALPH FRANKLIN HODGDON, M.D., residing at Rural Avenue, Medford, with an office at 109 Highland Avenue, Somerville, was found dead on a couch in his office June 8, 1933.

Dr. Hodgdon was born in 1879 and graduated in medicine from the Tufts College Medical School in 1902.

He was a Fellow of the Massachusetts Medical Society having joined in 1903.

NOTICES

ANNOUNCEMENT

William S. Altman, M.D., announces the opening of an office at 25 Adams Street, Quincy, Mass.

RADIO HEALTH MESSAGES

JUNE, 1933

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:30 P.M.

June

20 A Heart to Heart Talk

27 Social Service in Public Health

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:45 P.M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

REPORTS OF MEETINGS

ESSEX NORTH DISTRICT MEDICAL SOCIETY

NINETY-SECOND ANNUAL MEETING

The ninety-second annual meeting of the Essex North District Medical Society was held on Wednesday, May 3, 1933, at the Oldtown Country Club, Newbury. Dinner was served at 12:30 with ninety-two present, including the guest speakers and members of the cast in the pageant.

The day was warm and the open porch overlooking the river was used as part of the dining hall and to house the overflow of spectators for the pageant.

At 2:30 the business meeting started with the President, Dr. Mudge, of Amesbury, in the chair. He announced the death of Dr. H. Murray Crittenden and appointed as a committee to draw up resolutions Drs. Still, Ruel and Arthur P. George, of Haverhill.

The minutes of the last meeting were read and approved. The report of the Treasurer for the year was read and approved.

Dr. Burnham, in referring to the frozen assets of $438.69 at the First National Bank of Haverhill, called attention to the fact that the society in 1919 and 1923 had put aside a thousand dollars as a permanent fund to be reserved for a building fund. He expressed it as his opinion that, although this money was not intended to be used for current expenses, it was considered necessary as a result of the present emergency that the committee on invested funds be authorized to lend to the treasurer the amount of the frozen assets, such sum to be repaid to the committee on invested funds as soon as it again became available by liquidation or other settlement of the affairs of the First National Bank of Haverhill. The motion was seconded and unanimously carried.

In the absence of Dr. Allen, the committee on invested funds reported, through Dr. George B. Sargent, of Lawrence, that on April 20, 1933, there was on hand at the Essex Savings Bank of Lawrence, the sum of Sixteen Hundred Fifty-eight Dollars and Eighty-one Cents. It was regularly moved and seconded that the report of this committee be accepted.

Dr. Burnham read for the committee a report on the death of Dr. F. S. Smith of North Andover.

The Secretary asked the Society if it was felt that a change in the method of handling reports on deceased Fellows was desirable. It was brought to the attention of the Society that owing to the infrequency of the meetings and sometimes the delay of the committee in reporting resolutions on the death of a deceased Fellow that so long a time elapsed before they reached the family of the deceased that it made them less worth while. Remarks were made by Drs. Merrill of Lawrence, Durant of Haverhill, and Arthur P. George of Haverhill. Dr. Merrill moved that the President and Secretary and one other member appointed by the President, on information of the death of a Fellow, should transmit the regrets of the Society to the family of the deceased. The motion was seconded and an amendment accepted by Dr. Merrill was presented by Dr. Burnham to the effect that the President appoint a committee immediately upon receipt of the news of the death

of a Fellow, that committee to report at the next meeting of the Society. The motion as amended was unanimously adopted.

Dr. Durant then read for the committee the report on the death of Dr. F. B. Pierce of Haverhill.

Dr. Sweetsir read the report on the death of Dr. John W. Rand of Amesbury. Dr. Sweetsir moved that the cost of the dinner, $1.25, be paid by all the Fellows present, the guests being paid for by the Society.

Dr. Durant called attention to the fact that Dr. I. J. Clarke, long a worker in the affairs of the Society, had been seriously ill for many weeks and moved that the Secretary transmit to him its sympathy. The motion was seconded and carried.

Dr. Bagnall, reporting as to the delegate to the Committee on Public Relations of the Massachusetts Medical Society, stated that the committee had had two meetings to discuss the workings of the Industrial Accident Law in so far as it related to physicians, and that a subcommittee of the Public Relations Committee had been appointed by the President to meet with a like committee representing the insurers to iron out any difficulties which were apparent in the workings of this law. He solicited from the Fellows any information regarding personal experiences which might be of help in smoothing practice as related to the injured workmen.

The Nominating Committee reported through its chairman, Dr. Sweetsir, the following list of nominations of officers for the ensuing year:

President: Frank H. Coffin, Haverhill.

Vice-President: John Parr, Methuen.

Secretary and Treasurer: Elmer S. Bagnall, Groveland.

Auditor: A. M. Hubbell, Haverhill.

Censors: E. Philip Laskey, Haverhill, Supervisor; Charles F. Warren, Amesbury; Roland S. Toppan, Newburyport; Joseph F. Walch, Lawrence; A. E. Chesley, Lawrence.

Councilors: J. Forrest Burnham, Lawrence; Henry F. Dearborn, Lawrence; Arthur P. George, Haverhill; T. Raymond Healy, Newburyport; John J. McArdle, Lawrence; Roy V. Baketel, Methuen; E. Philip Laskey, Haverhill; Frank W. Snow, Newburyport; L. T. Stokes, Haverhill; W. Dacre Walker, Andover.

Nominating Councilor: J. F. Burnham, Lawrence.

Alternate Nominating Councilor: T. R. Healy, Newburyport.

Commissioner on Trials: J. E. Bryant, Haverhill.

Committee on Funds: Granville S. Allen, Lawrence; George B. Sargent, Lawrence; Henry Kapp, Haverhill.

Correspondent to *New England Journal of Medicine:* Elmer S. Bagnall, Groveland.

Delegate to Committee on Public Relations of Massachusetts Medical Society: Elmer S. Bagnall, Groveland.

It was moved by Dr. Durant, seconded and unanimously passed, that the Secretary cast one ballot for the slate as nominated.

The Secretary then read a letter from the American Hospital Association recommending the policy of periodic payments for the purchase of hospital care. No action was taken regarding this matter.

The Secretary read a communication from the Harvard Graduate School pointing out the availability of Commonwealth Fund Scholarships with a stipend of Two Hundred and Fifty Dollars a month for Fellows in the Massachusetts Medical Society in good standing who have been in practice for at least five years and residing in towns of five thousand or less between the ages of 30 and 50. No action was taken on this matter.

The Secretary called attention of the Fellows to the fact that a chiropractor in Methuen had been found guilty of practicing medicine without a license and that other cases were being investigated.

The Secretary announced the final vote on the Chiropractic amendment as follows: Yes, 60,999; No, 99,754; Blank, 109,396.

The Secretary read a communication from the *New England Journal of Medicine* on the matter of low standards for medical licensure in Massachusetts and it was moved by Dr. Durant, seconded and unanimously voted that the Society adopt the resolutions.

The President introduced Mr. J. F. Ballard, Director of the Boston Medical Library, who explained the demonstration of Babylonian clay tablets and classical texts which he had previously exhibited informally in groups.

The President then introduced Dr. Benjamin Spector, Professor of Anatomy, Tufts College Medical School, who outlined the pageant portraying the development of medical history. Then followed the characters, well costumed and made up, with acting of a high order, who showed their contributions to the development of medicine to its present stage. The program was very enthusiastically received and the hall was crowded to capacity until after the last character had finished.

E. S. BAGNALL, *Secretary.*

RECEPTION TO PROFESSOR ROBERTO ALESSANDRI BY THE MASSACHUSETTS ITALIAN MEDICAL SOCIETY

A dinner followed by a conference on "Hemostasis and Muscular Plugging in Brain Surgery" and motion pictures of (a) "Gastric Resection," (b) "Cholecystectomy," and (c) "Laminectomy" were offered by the Massachusetts Italian Medical Society at the University Club of Boston on June 2, 1933. Professor Roberto Alessandri of the University of Rome was the honor guest of the Society. He spoke on the above-mentioned topics.

The lantern slides showed very well the pathological changes and healing process in brain surgery; the first two motion pictures illustrated some

of the methods used in the teaching of surgery to students at the University of Rome, and the last film exemplified the "Laminectomy Operation of Alessandri."

The meeting was opened by Dr. E. D'Errico, President of the Association, and the formal introduction of Professor Alessandri was expressed by Dr. Carl F. Maraldi whose introductory remarks gave some information about this guest whom the Society had the pleasure and honor to entertain. He said in substance:

To many of us the honor guest is well known through his extensive writings and to some of us through personal contact. He is a versatile writer, as his articles, discussions, textbook chapters, and results of his own researches in major surgery testify. To delve into the literature concerning his work is not only a good language training but a surgical education per se. He has written in Italian, French, Spanish, German and English, and the proof of his splendid work is well expressed in clear language in the leading medicosurgical literature of the world. To mention a few examples:

Il Bollettino e Memorie della Societa' Piemontese di Chirurgia. Here we find a thorough exemplification "Sulle perforazioni delle ulcere gastro-duodenali."

Policlinico. Here we find "Su un caso di uronefrosi sinistra da vaso anomalo."

Bruxelles-Medicine. Here may be found the "Pathogenie et Treatment de l'ulcere peptique postoperative" and "Sur l'indication et la technique des resections gastriques pour cancer et ulcere."

Annuali Italiani di Chirurgia. Here we find "Alcune osservazioni di tecnica nella chirurgia cerebrale a proposito di un tumore operato del lobo frontale destro," and "Emostasi e piombaggio muscolare in chirurgia cerebrale" and "Epilessia jacksoniana post-tramatica. Criteri di cura chirurgica razionale."

The *International Journal of Medicine and Surgery* contains "Primary Closure of Bone Cavities."

Dia Medica contains "El tratamiento de la ulcere postoperatoria."

In the *American Journal of Surgery* may be found "Raynaud's Disease and Thromboangiitic Gangrene of the Upper Extremities Treated by Resection of Sympathetic Ganglia and Trunk."

Nelson's System of Surgery. Here we may find the Chapter on the Liver. (Et ad infinitum.)

These sketchy remarks show that there is not a part of the human anatomy into which this man has not delved and applied his splendid clinical work. His work in the extremities has been equal to that in the brain. This is true of his work in the abdomen as compared with that in the chest. His efforts include the soft parts as well as the skeleton, and the pleasing surprise is that he has given his results to the scientific world. Dr. Elliott C. Cutler, Dr. David Cheever and Dr. Frank H. Lahey know him personally and if the majority of the other invited guests do not know him personally they surely know him through his extensive writings, for the scientific history of this man is written in the annals of science. We are honored by the presence of his charming wife who as a true Roman follows him from victory to victory. Professor Alessandri has devoted thirty-one years to teaching in Rome, having been Professor of Surgical Pathology. He is at present Professor of Clinical Surgery at the University of Rome, the successor of the late Senator Durante. Many times he has served as president of the Italian Congress of Surgery. He was the president of the last Congress on Cancer in Rome and is a Fellow of the New York Academy of Science, Honorary Fellow of the American College of Surgeons and the Royal College of Surgeons, the clinical director of the Surgical Institute of the University of Rome and the recipient of the silver medal for bravery for surgical work performed under fire at the Italian front during the World War. It is sufficient to state that I am honored to introduce a very versatile writer, a charming individual, a devoted research worker, a teacher, an international surgeon, and a good practical man — Professor Roberto Alessandri.

Among the invited guests who were present were Dr. Elliott C. Cutler, Moseley Professor of Surgery at Harvard, Chief Surgeon at the Peter Bent Brigham Hospital; Dr. David Cheever, Associate Professor of Surgery at Harvard; Dr. Richard H. Miller, Assistant Professor of Surgery at Harvard, and a member of the Staff of the Massachusetts General Hospital; Dr. Donald Munro, Instructor in Surgery at Harvard, and Chief of the Surgical Neurological Service at the Boston City Hospital; Dr. Fred B. Lund, Chief Surgeon at the Carney Hospital; Dr. Joseph Stanton, Chief Surgeon at St. Elizabeth's Hospital; Dr. Antonio De Robertis, formerly of the Boston City Hospital, and the Dean of the Italian physicians of Boston who graduated in Italy; and Ermanno Armao, Royal Italian Consul General of Boston; all of whom participated in the discussion.

Preceding the presentation of his scientific paper, illustrated by lantern slides and followed by the projection of the three motion picture films noted above, Professor Alessandri spoke as follows:

Mr. Chairman, Italian Consul General, Distinguished Guests, Ladies and Gentlemen:

It is my pleasure to be in Boston, the Athens of the United States, as a guest of the Italian-American Medical Association, honored by the presence of great American surgeons who have been so kind as to come here tonight to see some of the work in the Surgical Clinical Institute of the University of Rome, under my direction.

I am here in this country with the mission of establishing better intellectual bonds of friendship and understanding between the medical men of Italy and those of the United States. During my

stay in this beautiful country, well known for its activities in all scientific and industrial fields, I have not failed to notice the great enthusiasm for new Italy under the leadership of our Duce Benito Mussolini.

This genius of our race has given a new impulse to all national activities and is taking great interest in the advancement of science.

I am taking this opportunity to pay my respects to the representative of our government who is so good as to be with us tonight, to give my thanks to the American surgeons who have given me the facilities of their hospitals and clinics that I might become acquainted with the surgical methods employed in this country.

I thank the Italo-American Massachusetts Medical Association hoping that, though very young now, with the activities just stated by the Chairman, it will spread its influence among all the physicians of our race and coöperate with American organizations in advancing better understanding between Italian and American Science.

Permit me now to thank personally Dr. D'Errico, Dr. Santoro, Dr. Maraldi, and Dr. Gambacorta for their coöperation in the success of this beautiful manifestation of esteem rendered to me.

Dinner at the University Club was the climax of a day spent visiting hospitals in Boston. During the day Professor Alessandri was a guest at the Lahey Clinic, the Peter Bent Brigham Hospital and the Boston City Hospital.

The meeting was closed by the President, Dr. E. D'Errico, who presented Professor Alessandri with the Honorary Fellowship in the Massachusetts Italian Medical Society. This was very graciously received by our visitor from across the sea.

CARL F. MARALDI, M.D., *Secretary.*

GREATER BOSTON MEDICAL SOCIETY

At the annual dinner and last meeting of the 1932-33 year, held May 25, the following officers were elected:

President: Maurice E. Barron, M.D.
Vice-President: Herrman L. Blumgart, M.D.
Secretary: D. Belford Stearns, M.D.
Treasurer: Henry A. Kontoff, M.D.

The joint meetings of the Society and the Beth Israel Hospital Staff will be resumed in the Fall.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

June 15—New England Hospital for Women and Children. See notice on page 1232, issue of June 8.

June 28 to July 3—Third International Hospital Association. See page 811, issue of April 13.

July 24-31—The IVth International Congress of Radiology. See page 1071, issue of May 18.

August 10, 11, 12—American Delegation to the International Goiter Conference. See page 768, issue of April 6.

August 13-27—Courses at the Tomarkin Foundation. See page 1070, issue of May 18.

September 25-30—The American Congress of Radiology. See page 1224, issue of June 8.

September 29 and 30—New England Surgical Society. See notice on page 1232, issue of June 8.

October 9-12—American Public Health Association. See page 1175, issue of June 1.

October 23 - November 3—The 1933 Graduate Fortnight of the New York Academy of Medicine. See page 1071, issue of May 18.

April 16-20, 1934—The American College of Physicians. See notice on page 970, issue of May 4.

BOOK REVIEWS

The Pelvis in Obstetrics. By JULIUS JARCHO, M.D., F.A.C.S. Paul B. Hoeber, Inc., New York, 1933. Price $6.00.

The author has given the medical profession a most interesting treatise on the female pelvis, both normal and abnormal. The various methods of pelvimetry are carefully gone into and clarified by well-chosen illustrations. The several methods of pelvimetry by use of the x-ray are clearly explained.

The entire book is well illustrated, has a remarkably full bibliography, and an index not only of subjects considered but of personal names that have been used in the text.

It is a most interesting and valuable book.

Morale, The Mental Hygiene of Unemployment. By GEORGE K. PRATT, M.D. Prepared for and approved by The National Committee for Mental Hygiene, New York City, 1933. 64 Pages. Price 25 cents.

This paper-covered book will be of considerable importance to social workers and those connected with welfare agencies. It deals briefly but adequately with the question of mental mechanisms in times of great emotional and economic insecurity. The quality of this book plus the small charge for it, should lead to extensive distribution among those interested in this subject.

Criteria for the Classification and Diagnosis of Heart Disease. By the Criteria Committee of the Heart Committee of the New York Tuberculosis and Health Association, Inc. (Joseph H. Bainton, M.D., Robert L. Levy, M.D., Arthur C. DeGraff, M.D., and Harold E. B. Pardee, M.D., Chairman.) Third Edition. Published by Tuberculosis and Health Association. 1932. New York.

The Criteria Committee of the Heart Committee of the New York Tuberculosis and Health Association has published a revised third edition of criteria for the classification and diagnosis of heart disease. The chief addition to this new edition consists of an appendix containing simple guides to the radiological and to the electrocardiographic diagnoses of cardiac abnormalities, the former by G. Nemet and the latter by A. C. DeGraff. The nomenclature for cardiac diagnosis takes up as previously, A. Etiological Diagnosis, B. Anatomical Diagnosis (Aorta and Pulmonary Artery, Coronary Arteries, Endocardium, Myocardium and Valves, and Pericardium), C. Physiological Diagnosis, D. Functional Capacity, E. Possible Heart Disease, and F. Potential Heart Disease.

This little book should prove helpful to those interested in heart disease who are not familiar with present American viewpoints. One of the radiological terms which should be corrected for the sake of consistency is postero-anterior. This should read antero-posterior. If it is retained, then the other terms should be altered to be consistent, that is, right anterior oblique should be called left posterior oblique, and so on.

A Companion to Manuals of Practical Anatomy. By E. B. JAMIESON, M.D. University of Edinburgh. Third Edition. Oxford University Press, 1932. Price $5.00.

There is always question of the value of any compendium on Anatomy. This Scottish volume, however, is superior to most of its class in that it is a genuine descriptive text, not merely a tabulation, and in that it is free from the errors which frequently beset this type of publication. It has already, for twenty years, served an obvious field of usefulness and now reaches a third edition in which it has been drastically revised. Few pages remain wholly unaltered, many have been rewritten, and whole sections such as those on the Perineum, the Heart and Pericardium, the Fetal Circulation, the Central Nervous System, and the Liver have been completely renewed. Though these alterations have entailed an increase of nearly one hundred pages, this is to be welcomed rather than regretted since the value of the volume is notably increased without transcending the convenient limits of pocket size. There is no attempt at pictorial illustrations. It is interesting to note that although the Basle nomenclature has in general been retained, the author has reverted to the use of axis instead of epistropheus, soft palate for velum palatinum, and a few others. This is the type of readjustment which is being made by most English-speaking teachers of Anatomy who have adopted the Basle terminology in most of its applications.

The Rise of Preventive Medicine. By SIR GEORGE NEWMAN, K.C.B. Oxford University Press. London: Humphrey Milford, 1932. 6 + 270 pages. Price $3.00.

This book of lectures, originally given on the Heath Clark Foundation in 1931, at the London School of Hygiene and Tropical Medicine by the Chief Medical Officer of the Ministry of Health, is an excellent bird's-eye view of the origins of preventive medicine. In a series of ten lectures, the field, which, of course, is very extensive, has been covered from the earliest times to the present. Of particular interest are the chapters on folk-lore and magic, the Middle Ages, and the last, which outlines Sir George Newman's ideas in regard to the future of public health work. The book is very readable, the references accurate, and the ideas expressed are those of a conservative man who, nevertheless, has distinct feeling for the future of his subject. Such a book can be highly recommended as a proper introduction to the subject of preventive medicine, for it will give the reader a splendid historical background on which to advance his specialty. The latter chapters are distinctly English in their point of view and much that has been accomplished in this country and elsewhere is omitted. This is a definite drawback for the American student. It is hoped that a book of a similar nature will be written in this country, giving due weight to the advances made in public health measures by officials of the federal and state public health agencies.

Colonic Irrigation. By W. KERR RUSSELL, M.D., B.S. Baltimore: William Wood & Co., 1932. ix + 191 pages. Price $3.00.

The author of this book is connected with the physiotherapy departments in two different London hospitals, is assistant editor of *The British Journal of Physical Medicine*, and is author of a book on ultra-violet radiotherapy and co-author of another book on the same subject. The volume contains nine chapters, the first of which, on the history of clysters, is most interesting; the others are devoted to the anatomy and physiology of the colon, the feces and flora and parasites of the intestine, colonic lavage apparatus, the technique of colonic irrigation, its physiologic effects, the contraindications, and finally, the conditions in which colonic lavage has proved beneficial. There is a bibliography and an index in the back.

The author states: "The fact that certain individuals may exploit colonic irrigation or use it indiscriminately does not constitute a sound reason for condemning it. . . . One earnestly hopes that the medical profession will not allow these excellent methods to be used solely by the untrained layman, or else progress will inevitably be slowed." He believes that colonic irrigation is a branch of physical medicine and feels that compulsory lectures, practical work, and examinations should be required of all students before graduation. If this is followed, he believes that this important method of treatment will no longer be relegated to the charlatan and quack as, unhappily, is too frequently the case at the present time.

Whether or not one is willing to concede that colonic irrigation is an important therapeutic procedure, it must be admitted that the book is well assembled, the illustrations are fair, and the first chapter on the history of clysters is of particular interest.

A Text-Book of Psychiatry for Students and Practitioners. By D. K. HENDERSON and R. D. GILLESPIE. Third Edition. Humphrey Milford, Oxford University Press, 1932. Price $4.50.

This volume, written by two British physicians, is dedicated to Adolf Meyer. The authors express the sentiments of many others when they say, "The

biological viewpoint of Adolf Meyer . . . has seemed to us to shed fresh light on the nature of mental illness . . . [which it] regards as the cumulative result of unhealthy reactions of the individual mind to its environment, and seeks to trace in a given case all of the factors that go to the production of these reactions."

The book of which there have been two previous editions touches on practically every subject connected with functional and organic mental diseases. It is only natural that in attempting to deal with so large a subject, much of the matter should be treated in a sketchy way and that the presentation of its more complex phases should not be always perfectly lucid. The views of Freud, for example, are given in a way which one familiar with them can comprehend but would possibly leave a beginner, for whom the book is obviously intended, somewhat bewildered. Faults such as this, however, are to be found in most single volume works on psychiatry and this one will probably give a better picture than most of the various clinical conditions or "reaction types" described. The use of case records for purposes of illustration is a decided help.

Meyer's classification of the psychoses into "reaction types" is followed. The British and American (New York State) classifications are also given. The authors take the view, emphasized by Meyer and others, that in the case of functional psychoses, differential diagnosis is often less important than careful investigation of the patient's background in a search for possible etiological factors. Very little space is devoted to the discussion of psychoanalysis.

The chapter on the psychiatry of childhood, included for the first time in this edition, ought to serve a useful purpose now that abnormal behavior of children is receiving so much attention. There is practically universal agreement that these disorders may be the beginning of other serious difficulties later in life and that attempts should be made to understand and correct them.

Some interesting and helpful information, notwithstanding its brevity, is to be found in the section on laws pertaining to mental disorders in England, Scotland, America and on the continent.

Diseases of the Heart. By Sir Thomas Lewis. The Macmillan Co., New York, pp. 297. Price $3.50.

This small volume is an outline of the author's clinical teaching on diseases of the heart as it has developed in his talks to his own hospital students, and is intended for students and medical practitioners. The thirty brief chapters cover all the important cardiac disorders and in addition include special discussions of some of the more significant elements of cardiovascular disease, such as edema, venous congestion, irregularities of the heart, etc. Throughout the book one is impressed with several outstanding characteristics. The clarity and simplicity of the language are unusual and have typified all the writings of the author. He has a peculiar facility in rendering comprehensible even the most difficult and intricate problems. Furthermore the explanation of phenomena is most lucid. He is able to draw on his thorough knowledge of the physiology of the circulation in appraising the various factors that underlie the signs and symptoms which are discussed. This is particularly true of his comments on venous congestion and its significance, and on syncope.

Where this book fails to reach the extremely high standard attained by the author's former books is in the purely clinical considerations. Inasmuch as it is intended for practitioners, this is a distinct shortcoming. One gets the impression that the contents are aimed at too low a level for the American general practitioner. During the past decade the practitioner has been fairly well informed of the importance of the heart muscle in maintaining an adequate circulation and of the comparative benignity of many heart murmurs. In fact the pendulum has swung too far in this direction, and Sir Thomas places too great an emphasis on this point which probably needs to be reëvaluated.

There are frequent statements to which American cardiologists would surely take exception. For example, he states that "auricular fibrillation once established persists for the rest of life—a few cases are paroxysmal in type". The great frequency of transient auricular fibrillation in hyperthyroidism, acute coronary thrombosis, hypertensive and rheumatic heart disease and its occasional occurrence in normal people contradict this. It might have been better to caution against the use of strophanthin intravenously in a patient who has recently taken digitalis, for in this country there were some fatalities when strophanthin first came into use.

The author states that aortic stenosis is rare. In this country it has become increasingly apparent that it is quite common and not difficult to recognize clinically. One serious difference in opinion that can be held concerns the author's attitude in discussing the type of valve disease in judging prognosis. Emphasis is merely placed on whether there is dyspnea and failure, or not. No mention is made of the fact that when dyspnea or failure develops in a case of aortic stenosis or insufficiency, the prognosis is almost always under a year and rarely very long, whereas in mitral stenosis it frequently is many years. Here the type of valve lesion is a most important guide as to the duration of life. The general disregard in this volume for heart murmurs overlooks the fact that in many children and some adults a systolic murmur often is the main helpful evidence that the individual is rheumatic, where there is no past history of rheumatic fever or chorea. It is most extraordinary to read that "the fingers should be trained to recognize high-tension pulse; for a pressure meter can hardly be used as a routine in general practice". It has been the experience of most men that the errors are too great to rely on palpation in esti-

mating blood pressure. The omission of mention of the notching of the ribs in coarctation of the aorta indicates failure to keep abreast of the most recent work and overlooks one of the most important features of this disease.

One could illustrate with other clinical points concerning which at least differences of opinion exist. The above references were gone into in some detail, because of the well-deserved eminent reputation that the author holds, as a result of his other works. It would be better had the clinical inferences been entirely omitted, and had the volume been shorter and limited to an explanation of the signs and symptoms of heart disease, for in this the author is unexcelled.

The Diagnosis and Treatment of Postural Defects. By WINTHROP MORGAN PHELPS, B.S., M.D., F.A.C.S., Professor of Orthopedic Surgery, Yale University, etc., and ROBERT J. H. KIPHUTH, Assistant Professor of Physical Education, Yale University. Charles C. Thomas, Baltimore, Md., 1932. Price $4.00.

In a well-illustrated book of 175 pages, Phelps and Kiphuth discuss the evolutionary development of the human biped, normal posture and body mechanics, the methods of postural examination, and the place of posture in physical education. Corrective exercises are described and illustrated. Statistics are given of findings and results of corrective efforts.

The authors trace the evolution of the earth walker from adaptation of the tarsoid quadriped of the Eosine and early Niocene Age (30,000,000 years), first through the tree apes with the gravitational pull downwards on the arms, and then to that group which left the trees and became earth walkers, with the subsequent changes in a body supported on the legs in the prehuman type. The vertical carriage of the gibbon when on the ground resembles the vertical posture and bipedal gait of the original representatives of the human stock. They trace the influences in infancy which gradually unbend the body from its flexed position in utero and the gradual adaptive changes in relative length and strength of the muscles which eventually must maintain the erect posture.

The word *normal* in contrast to the word *ideal* is used throughout the book, largely in the sense of statistical averages as the authors have found them in a small number of examinations of children 12 years or under (250), in a larger number of youths from 13 to college (1503) and in a still larger group of college men (3503). The conclusions which they reach and the measures advocated for correction are based entirely on studies of boys and younger men. They suggest that results in girls and young women might show quite different percentages. The book, therefore, does not claim to be a complete review of the general subject of body mechanics in its relation to functional health of the race.

The authors believe that by and large the training in good body mechanics is usually unnecessary before the adolescent period. They base this conviction on the ground that before this period the activities of the child are general and body flexibility is the rule. They state that in the preadolescent periods severe postural defects are due "in all instances to disease" and maintain that "postural correction among children is indicated only for unwell children". We fear the opinions of educators would not agree with the statement that the generalized activities of the child give no clue to the particular interests which will come during adult life. Even in the field of sports, embryonic baseball and hockey and tennis players are evident long before adolescence, and in the arts the child is often the prophet of the man.

It is interesting also to note that their statistics of correction of faulty posture show that correction of forward neck and dorsal kyphosis is easy in children and the percentages of their corrections under 12 is much higher in the early years than in the group from adolescence to college and in the college group. The correction of forward (round) shoulders and of lordosis is also higher in children than in the adolescent groups. They do not stress the preventive aspects of this early training in correct body mechanics which the recent White House Conference Subcommittee on Orthopedics and Body Mechanics was led to believe is of great importance.

The chapter on body mechanics in general and the mechanics of the spine and individual joints is excellent as are the deductions which the authors draw as to the mechanically efficient stance. They point out that in active exercise greater efficiency can be attained if the muscles hold the thorax and spine in the extended position because the elevation of the thorax increases its capacity by allowing the diaphragm to work at a greater range. The contraction of the erector spinae group pulls the head back, straightens the trachea and assures ease of breathing, lifting the abdominal viscera by the action of the "suspensory ligament of Goldthwait" and freeing the diaphragm from load. These same muscles also stabilize the scapulae, providing a favorable leverage for the arm-raising deltoids. Under these conditions the least possible degree of postural muscle tonus is required for the erect position and, therefore, unnecessary fatigue is avoided.

In the chapter on Postural Examination, the authors propose only three classification groups, good, fair and poor posture, and discuss the common deviations and their anatomical associations.

The later chapters deal with "Posture in Physical Education" and with "Corrective Exercises." Since they consider that "the time to start corrective exercise is in the adolescent period," the exercises would not be always applicable to children and in general as illustrated, presuppose a state of health and muscle development which is not often

found in those subjects most needing correction. For late high school or college groups, on the other hand, they would have wide application and have been planned and proved efficient by an able physical educator. The book is scholarly and will be found extremely useful for these later age groups. We shall do well, however, not to forget the 200-year-old teachings of Andry in his "Orthopaedia." We should continue to begin to prevent and to correct as early as may be, not by naggings of the child or by admonitions to sit up straight, but at first by plays and then by games, and thereby make the game seem worth the candle. All the careful surveys of large groups of children and adults show that this can be done, and that it needs to be done.

The Child and the Tuberculosis Problem. By J. Arthur Myers, Ph.D., M.D., F.A.C.P. Charles C. Thomas, Baltimore, Maryland. Price $3.00.

This is another short book from the prolific pen of Dr. Myers and is a welcome contribution to our knowledge on the subject of the childhood type of tuberculosis, its diagnosis and treatment. It is attractively written, consists of 217 pages divided into 16 chapters, with an excellent index and a very complete list of references. The plates and illustrations are of the best as is likewise the printing. The subject matter is divided into paragraphs with each paragraph plainly titled and an excellent summary at the end.

Among other important chapters are "The Control of Tuberculosis in the Teen Ages"; "Finding and Disposal of Tuberculous Children"; "Controlling Tuberculosis Among Families"; "Prevention Among Non-Tuberculous Children"; and "The Program for the Future." Dr. Myers' point of view embodies all that is best on the subject and represents a consensus of the leading authorities in this country and in Europe. As a book of reference it will be invaluable and as a textbook for students in this most important field in our tuberculosis campaign can hardly be improved upon.

There is very little in this book with which one can disagree. Some of his statements might be considered a bit radical and perhaps open to dispute as, for instance, on page 154, "There is no scientific evidence to prove that the child is more susceptible to tuberculosis than the adult." He may be right that this would be difficult to prove scientifically but I feel that every clinician would agree with me that the average normal, healthy adult is extremely unsusceptible to tuberculosis which certainly cannot be said of children. In my own case after some twenty-five to thirty years of intimate dealing with consumptives of all stages I have not had, nor do I have, the slightest worry about my own health on that score but I admit frankly that I was greatly relieved when I was able to move my office out of my house to an office building so that my child could not in any way be exposed to infection from the patients coming to consult me. This, however, may be looked upon as a minor point. The book on the whole is an excellent one.

The Common Cold. By David Thomson and Robert Thomson. Baillière, Tindall & Cox, London, and Williams & Wilkins Co., Baltimore, 1932. Vol. VIII of the Annals of the Pickett-Thomson Research Laboratory. Pp. 738.

This volume of the Annals of the Pickett-Thomson Research Laboratory continues their valuable series of reviews and contributions on various subjects. Organized presentation of a great mass of medical literature which has accumulated on various subjects, the policy to which the authors of these annals have committed themselves, is of value to all workers in the field covered.

This particular volume contains an exhaustive review of the literature having to do with the common cold with special reference to the organisms involved.

The material covered comprises the following: the prevalence of the common cold; structure and physiology of the nose and the nasal sinuses; bacteriology of the healthy nose and nasopharynx; physiology and chemistry of the mouth and saliva; bacteriology of the normal mouth; physiology of the trachea, bronchi and pulmonary alveoli, and their bacterial flora in health.

Then follows a study of the common cold as a disease entity, its relation to influenza, colds of non-contagious type, and the infectious nature of the common cold.

Then follow studies of the part played by specific organisms in the causation of colds: pneumococci, micrococcus catarrhalis, streptococci, Pfeiffer's bacillus, Friedländer's bacillus, and other organisms.

Sections are devoted to the various factors predisposing or causing colds, such as chill, poor ventilation, the rôle of fatigue, etc. In addition, there is a study of the complications of the common cold, and a study of the efficacy of vaccines and other types of treatment. The prevention of colds is considered.

The authors feel that the filter-passing virus hypothesis does not adequately explain the occurrence and behavior of colds. They feel that colds represent diverse types and are caused in various ways.

A number of excellent illustrations of bacterial colonies recovered from the nose and throat add materially to the value of the book.

At times the intense seriousness of the authors ends a touch of humor to those of their readers who may be light minded, as, for instance, in discussing the control of dust and dust-borne infections in the city they recommend the installation of water closets for dogs in the homes of their owners.